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GENERAL NEWS SECTION.....

*Illustrated.

American Railways and American Manufacturers

The changes made in the duties on iron and steel articles by the tariff legislation of recent years probably make it possible for the foreign manufacturers of certain railway supplies to undersell the American manufacturers in the market in this country. On first thought it seems obvious that the railway manager should take advantage of the lower foreign prices. On second thought it doesn't seem so obvious. Railways transport as well as buy commodities. When they buy articles made abroad they may get the benefit of lower prices, but the only haul they get in connection with the transaction is that of the

finished product from the arrival port to destination. On the other hand, when they buy at home they get the hauls of the raw materials and fuel used in manufacture as well as of the finished product; and furthermore, every article made at home gives employment to American labor, which, in turn, causes the transportation of all manner of commodities consumed by American labor. When, therefore, railways buy equipment or supplies made abroad they automatically reduce the amount of their own traffic and earnings; and to determine whether in the long run they make a net gain or suffer a net loss by the transaction may require some pretty close figuring. The above applies to the railways as a whole. As to the individual road, when it buys abroad it incurs the danger of being told by the American manufacturers that he will give his traffic to the railways that buy from him and withhold it from those that don't buy from him. This traffic argument always has been and always will be pretty effective. Therefore, it seems somewhat unlikely, even though there may sometimes be substantial differences between domestic and foreign prices, that American railways will ever deem it expedient to buy considerable quantities of equipment and supplies abroad. In fact, practically the only countries whose railways do buy substantial amounts of equipment and supplies abroad are those whose own manufacturing industries are not highly developed, even the railways of free trade England being largely governed in making purchases by the same motives that are likely always to be controlling here.

Passengers Carried at Less Than Cost

The decision of the New York Supreme Court, sustaining an advance in rates for suburban season tickets on the New York, New Haven & Hartford, which was briefly reported in our issue of January 16, page 146, presents quite clearly the issue between the passenger who demands very low rates simply because he has always had them, and the carrier who claims the power to make such rates, when he pleases to do so, without binding himself to allow the public to claim them as a matter of right. The decision is abstracted in another column. Probably the case will be appealed, but the higher court will have a simple, though important, question, and should not require much time to pass on it. The court discusses the case on the basis of the rate between New York and Mount Vernon, 14 miles. The monthly ticket passenger pays about 13 cents a ride (advanced from 11 cents in 1910). The road showed that it pays the New York Central 4.07 cents for each such passenger (12 of the 14 miles being on Central tracks); that it pays, in addition, 6.77 cents per passenger for the use of the costly New York terminal, and that its own train expenses equal 4.55 cents per passenger; in other words that it costs 15.39 cents to give a service for which only 13 cents is received; and nothing is included for fixed charges, taxes, etc. The Public Service Commission, F. W. Stevens, chairman, held the advance not justified. It did not decide that the higher rate was unreasonable; it based its conclusions on the general consideration that the road must promote the prosperity of the suburban district, not being careful to calculate "just how many tenths of a cent the rate can be raised or lowered." It found that in two years, 1910-1912, the increased rates had affected the suburban towns unfavorably; that the net receipts had not increased in any satisfactory degree, and that the costly service of the terminal ought to be charged, not alone to the passengers who use it, but, as a general operating expense, to the whole New Haven system. The court, in annulling this decision, says that if the community suffers, that is unfortunate; but it is not a reason why the company should render service at a loss; that the tenth of a cent, referred to by the commission, may be the difference between profit and loss; and that there is no justice in requiring a passenger from New Haven to Boston to pay too much, in order to be able to carry the man from Mount Vernon to New

York for less than cost. In this case, it will be seen, the main issue is the fundamental question whether a company of state commissioners, having no responsibility for financial results, may use a railroad company's money as though it were their own. To carry passengers at less than cost may be good policy; but who can rightly do such a thing except the owners of the road?

THE DELAWARE & HUDSON STRIKE

REPRESENTATIVE statesmen are constantly saying that Americans love justice and fair play, and, acting on this view, substantially all of us continue to be optimists. The Delaware & Hudson strike, however, has served as a sharp reminder that some of our governmental operations are grotesquely crude and weak.

The public is interested in this strike in three directions: in the acts of the brotherhoods, in those of the railroad company and in those of its own agent, Mr. Hanger. The brotherhoods insisted on striking, when the railroad offered to arbitrate and the government tried to get them to do the same; and no reasons are given. This attitude belies all the declarations of the leaders about their respect for public opinion.

While the brotherhoods had too little regard for public opinion, the road may almost be said to have had too much. The New York newspapers could not believe that there was not some concealed weak point in its armor, and felt bound to conclude that there was some important fact yet to be brought out; but the company stands by its brief statement issued the day after the strike, and insists that there is nothing more to be said. It bows to public opinion, as embodied in the recommendation of our powerful paternalistic government, conveyed through the mouth of Mr. Hanger, that it yield to the strikers. It puts back into its train service two men whom it cannot fully trust, simply because the government, speaking through an almost unknown man, advises it to do so. That is the Washington method of promoting the safety of passengers and employees! The gist of the whole transaction, so far as the public knows, is expressed in two sentences (see last week's issue, page 169).

Mr. Hanger: As a public official . . . and solely for the protection of the public interest, I most earnestly urge the company to recede. . . .

The Company: The railroads having pledged obedience to the Newlands law, the recommendation of Mr. Hanger is accepted. . . .

The company's statement added that " . . . If discipline is to be maintained, means must be found to insure the action of the Newlands law, or the railroads should be relieved of their obligations under it." The Newlands law, however, does not compel an employer to accept the recommendation of the commissioner or assistant commissioner of mediation; and the only reason made public why Mr. Hanger made the recommendation that he did was that the brotherhoods would not arbitrate! Of course, if the road stood its ground it would suffer large financial loss; and the public would be inconvenienced very seriously, and at great cost.

This strike differs somewhat from that of last November on the Sunset Central Lines, though in both cases it was discipline, not pay, that was at stake. In the Texas case, after four days' suspension of traffic, the road submitted to the unreasonable rule that four brotherhoods, representing four different kinds of work, might take a hand in settling grievances affecting only one kind. This rule, in its effect, justifies the sympathetic strike. In principle it may not be wholly vicious. When once an employer agrees to confer with a committee of advocates he has permitted the entering wedge which will finally admit any number of advocates that the aggrieved employee can muster. In practice, however, it is only a simple device to insure that might shall make right.

The Delaware & Hudson accepted this rule, and the combined brotherhoods used their power.

Now, in these particular cases of discipline the Delaware & Hudson management may have been right or wrong. Whether it was right or wrong was a matter which might have been

settled by arbitration. But as to the right or wrong of the course taken by the employees there can be no question. They had no right to strike and inflict great inconvenience and loss on the public. The merits of the cases of these two men certainly were doubtful, and they had not been passed on by any impartial tribunal. Let us assume that the company was in the wrong; that the superintendent had wrongfully discharged the two men and that the general manager sustained him. Were the leaders afraid that they could not convince two impartial arbitrators of this fact? (Our board of six is really only a board of two.) They seem to have convinced Mr. Hanger very easily. The road showed its confidence in its case by promising Mr. Hanger to arbitrate. Did the brotherhoods use their might simply to punish the road for not offering to arbitrate earlier in the proceedings?

The road has suffered itself to be humiliated. As we have said, the case will serve to illuminate the weakness of the government. It is to be hoped that the main issues are so clear that everybody can also see what railroad labor-controversies really mean. They mean danger. Rights of individuals are fought over, while the safety of trains is neglected or even forgotten. These two trainmen may not hereafter do anything dangerous. To compel the superintendent to employ them may not break down his discipline, utterly. But discipline has been weakened at a vital point; and discipline is essential to safety. If the superintendent is at fault; if the men were worth keeping and ought to have been kept, the public wants that conclusion, not from a partisan labor leader, or four such leaders; nor from an irresponsible mediator; but from real arbitrators.

If the government has a duty to discipline a railroad because the discipline administered by the railroad superintendent is not good for the public, there must be found some better way to do it than to transfer authority from the superintendent to a committee of the employees or their agent.

Mr. Hanger represented the federal government. Things being as they are, he is in effect a lawgiver. Because of the unsettled conditions in the railroad service, or the bigness of the country, and the consequent difficulties in every controversy of this kind; or because the gravity of these matters is not appreciated at Washington, or the men "higher up" evade their responsibilities, the fact is that issues affecting millions of people and great pecuniary interests are left to be settled by a man for whom no one claims either railroad experience or judicial training. The glaring scandal of the matter is that on questions which, in other fields, would be decided at Washington by nine of the wisest men in the country—after preliminary decisions by the lower courts—the decision here is left in the hands of one man who apparently has no very rigid rules to restrain him. The judges of the Supreme Court spend days and nights in formulating their reasons; and the people rightly and reasonably accept the decisions of that court as the law of the land. This single lawmaker, sitting at Albany, gives no reasons whatever.

TRACK CONDITIONS AND SPEED

THREE recent derailments on southern roads resulting from speed which was excessive in view of the condition of the track were of such seriousness as to demand that very careful attention be given to this subject. On October 19 a Mobile & Ohio passenger train was derailed near Buckatunna, Miss., resulting in the death of 17 passengers and in the injury of 139 passengers and 6 employees. On October 29 a passenger train on the St. Louis & San Francisco was derailed near Chelsea, Okla., killing the engineman and injuring the fireman. On November 13 a passenger train on the Central of Georgia was derailed near Clayton, Ala., killing 9 passengers and injuring 389 passengers and 1 employee.

These three accidents occurring within one month, resulted in the death of 27 persons and in the injury of 536. The report of the chief inspector of safety appliances of the Interstate Commerce Commission on the first accident was abstracted in

the *Railway Age Gazette* of January 16, page 135, while abstracts of the reports on the other two accidents appear elsewhere in this issue. The investigation of the first accident showed that the track was well maintained and in good condition, but that while operating rules limited the speed of passenger trains to 50 miles an hour, the speed of the train at the time of the accident was not less than 55 miles an hour, and that the derailment was due to operation at this high rate of speed while rounding a curve of 3 deg. with only $3\frac{1}{2}$ in. super-elevation. The report of the inspector on the Frisco accident shows an unsatisfactory condition of track. In the investigation of the Central of Georgia derailment even worse track conditions were found.

The primary object sought by a railway management should be safety. Accidents such as the three above mentioned do not indicate that the principle stated was lived up to. Some railway men will contend that under existing restrictive legislation earnings will not permit the track to be maintained in the condition it should be. This is true in some instances. But if track cannot be maintained safely for a speed of 50 miles an hour, the speed can and should be limited to 40, 30 or even 20 miles an hour, depending upon the condition of the track. A railway management must assume responsibility for the speed at which trains are run over its lines, and if trains moving at an excessive rate of speed are derailed the management cannot evade the responsibility for the results by referring to its inability to secure money properly to maintain its track. The rate at which trains are operated is entirely under the control of the railway officers, and if they cannot maintain their tracks so as to permit safe running at high speeds, they should reduce the speeds until they will not endanger the lives and limbs of their patrons. It is true that many roads are being gradually starved, and the track is the first to feel the effects of restricted expenditures. But the situation presented must be resolutely met, for while desiring high speed, the public can properly demand that no railway company operate its trains at such a speed as to be dangerous.

THE INTERSTATE COMMERCE COMMISSION REPORT IN THE FRISCO INVESTIGATION

THERE is nothing in the Interstate Commerce Commission's report, an abstract of which is published elsewhere in this issue, on the St. Louis & San Francisco situation which would lead the *Railway Age Gazette* to modify in any way its condemnation of the kind of financing that was done "for" the St. Louis & San Francisco by the "insiders." On the other hand, there are certain loose expressions in the Interstate Commerce Commission report about the Frisco relations with its bankers that, to say the least, are careless to an unwarrantable degree. Dramatic critics sometimes write a review of a first night performance in such a way that if the entire criticism is read, the impression conveyed will be that which the critic desires, but from which certain sentences or phrases can be culled which can be used in headlines for an advertisement that convey an utterly erroneous impression. It would possibly be unfair to accuse the Interstate Commerce Commission of deliberately writing the results of its investigation—which, by the way, no member of the commission has assumed responsibility for, the opinion being "by the commission"—in such a way as to mislead or be capable of sensational exploitation. Nevertheless, the report is subject to misinterpretation on a number of points and lends itself easily to partial quotation by sensational newspapers in a way that it certainly ought not to. It is not at all improbable that the commission got in beyond its depth and was so pushed with other work that it could not devote the necessary time to the St. Louis & San Francisco investigation and left a good part of the opinion to be written by subordinates.

Since 1907 the St. Louis & San Francisco, like other roads, has followed the method of keeping accounts which is prescribed by the Interstate Commerce Commission, or if it did not, the re-

sponsibility rests in part on the commission, since it is not only given the authority, but is specifically made responsible for the form of accounts which railroad companies now keep, and the companies' books are always open to inspection by examiners appointed by the commission. The record of discounts on securities sold by the Frisco is shown in its reports in accordance with the rules laid down by the I. C. C. It is, however, in dealing with discounts on securities sold that the present report of the commission is most liable to misinterpretation.

The commission says, "The discount on bonds and notes other than short term notes issued by the Frisco and lines which it controls, including the Frisco issue of bonds on the New Orleans, Texas & Mexico Railroad and the premiums paid on the retirement of underlying issues, aggregated \$32,152,602.07. . . . The payment of this enormous amount of discount in 12 years must be deemed to be due to one of two causes, (a) that the credit of the Frisco was very poor; or (b) that bankers obtained the securities at prices which may or may not have been as high as could have been obtained from those not directly interested in the financing of the Frisco."

The commission goes on to elaborate on this statement, pointing out that at 4 per cent. on the net discount and commissions carried by the Frisco, this represents "an annual expenditure of \$1,226,630 for interest upon the money which it never received." Further along in the report there is a table headed "Discounts, Premiums and Commissions Paid," showing each series of securities issued and the bankers through whom these issues were sold. Under the name of each banker is the total amount of discount on the securities sold through these bankers. This is plainly unjustifiably open to misinterpretation. It is perfectly true that in other parts of the report the commission points out that "the accounts show that the securities were sold at prices higher than those above quoted; but commissions varying from 1 to $2\frac{1}{2}$ per cent. were paid to the bankers aggregating more than \$3,000,000. In other words, instead of more than \$30,000,000 being paid by the Frisco, the total commissions on the sale of about \$207,000,000, par value, of securities was \$3,000,000 and not \$30,000,000. There is in one part of the report the statement that "the excessive issue by the Frisco of interest bearing securities instead of capital stock may be due in part to the requirements of the state of Missouri, the capital stock of railroads may not be sold at less than par, while no other restriction is placed upon the sale of the bonds." But the commission adds that: "It is also customary in issuing additional capital stock to deal with the stockholders for a portion, at least, of the new issue, while the disposition of bonds is usually a transaction with banks or bankers to whom profits accrue." It is quite unfair to insinuate that the bankers were in any way responsible for the discount at which Frisco securities could be sold. The securities were sold at the market, less $1\frac{1}{2}$ per cent. banker's commission.

The St. Louis & San Francisco affair is bad enough as it is. Promoters' profits at the expense of the security holders of the corporation are sufficient reflection on railroad credit without any misleading report as to the company's relations with its bankers. The commission finds that the price charged by the bankers for their services was between $1\frac{1}{2}$ and 2 per cent.; and later, in reviewing the progress of the Chicago & Eastern Illinois receivership, the commission mentions the sale of \$4,000,000 6 per cent. receiver's certificates, the entire issue being taken by the Equitable Trust Company at par, less $1\frac{1}{2}$ per cent. commission.

The commission exacted by the bankers, even according to the Interstate Commerce Commission's own showing, was not unreasonable. The discount at which Frisco securities were sold is an absolutely different question, and the Interstate Commerce Commission might well have pointed out that whereas the purchase of a 5 per cent. bond at 78 might seem like a good investment, the facts of the case are that it has turned out a bad investment, and so far from the market for Frisco securities being too low it was actually too high. The 5 per cent. general lien bonds instead of being worth 78 were actually worth con-

siderably less than that. If there was an injustice done at all by the bankers it was not an injustice to the railroad company, but to their own clients to whom they recommended the purchase of Frisco securities; and again it should be pointed out that the \$30,000,000 discount on the securities sold did not benefit the bankers, and it looks very much as if it would not benefit the security holders either, since a good many of them may never receive par for the principal of their investment.

The Interstate Commerce Commission probably thinks that its report on the St. Louis & San Francisco is an argument in favor of giving that body authority to regulate the issue of railroad securities. As a matter of fact, while the Frisco financial situation very strongly shows the necessity of either publicity or some sort of regulation, the report made by the Interstate Commerce body suggests strongly that that body has now more work than it can possibly do.

NEW BOOKS

Brest as a European Transatlantic Port. By Claude Casimir-Perier. Paris, Librairie Hachette et Cie, Boulevard Saint-Germain, 1914.

At the extreme northwest of the continent of Europe is the port and harbor of Brest. It is further west in longitude than any port in Great Britain. Galway, Londonderry and Queenstown in Ireland, Coruna in Spain, and Lisbon in Portugal, are the only important European harbors of more western longitude.

Upon this premise Claude Casimir-Perier, the son of the late president of the French republic, has written a most interesting study 376 pages long, with appendices of a further 258 pages.

It seems that in 1898 the British consul at Brest, Herbert Gye, himself formerly captain in the merchant marine, emphasized the fact that Brest is of all Europe the nearest point to America. The author's effort has been to prove not only that Brest is in every manner the most advantageous port for all Europe for traffic to South America, the United States and Canada via Panama, but also that it is a national project of the highest merit to develop this port, increase French shipping and obtain for France the supremacy of the Atlantic. We often hear of the painstaking scholarship of the Germans, but this Frenchman has developed his theme with astonishing thoroughness and detail. The local peculiarities of all the French harbors are collated and compared, and estimates are made of the cost of deepening and enlarging capacity in each case. He has considered the geographical conditions, including the existing rail connections and railroads that will need to be built, in France and beyond. He has developed the savings or losses of time in using the port of Brest from all the principal ports in the new world to all the important cities of Europe, and has even thought out the relationship of this French harbor to Siberia, Japan and the rest of the Orient. A most interesting chapter deals with the necessity of improving the inter-communication between the several railroads entering the city of Paris, and a detailed plan for a belt railroad and union station is presented. His project for the system of docks and landing stages at Brest, including the railroad terminal and facilities for handling passengers, baggage and freight is thoroughly convincing; and is marked, among other things, by the free use of the moving platforms as a means of conveyance of passengers and baggage along the quay and to and from the arrival and departure platforms of the railroad station. To develop to the utmost the utility of Brest as a harbor, he has likewise planned a system of canals for all of France which, in a general way, are to link Basle and Geneva by way of Orleans and Nantes with his new international shipping point.

The third part of his study is in the nature of a program, and examines with much care the necessary and possible time-tables over the new routes to be created and the costs of providing the necessary facilities. Types of locomotives and cars for all classes of service are discussed and determined. The standardization of block and automatic signals is insisted upon. At intersections of branch lines on double track, all crossings at

grade, he says, must be eliminated. Track-tanks are recommended to save loss of time at water stations. All these are but illustrations of the many instances of research and foresight that the book contains.

For the harbor, dock and station facilities, 109,000,000 francs are deemed necessary, while the total, including the necessary new construction of railroads, double tracking, etc., is 970,484,000 francs. When to these are added two new lines into Italy, the Paris union terminal and the canal construction, the grand total becomes 2,644,772,000 francs, or roughly \$528,000,000.

The text is not only illustrated, but is illuminated by many maps, plans and architectural drawings. Especially striking are the charts of lighthouses, soundings and distances and the world-maps of the "zone of influence" via Brest. Copious statistics of trans-Atlantic travel and shipping are set forth and commented upon. His book concludes with this dignified apostrophe to the French nation: "The work of creating Brest into a French port for the transatlantic commerce of Europe is worthy of the attention and the enthusiasm of French patriotism. I hope that it will find neither beneath our ambitions nor above our power the conquest of the Atlantic and the commercial hegemony of the world."

Excavating Machinery. By Allen Boyer McDaniel, Assistant Professor of Civil Engineering, University of Illinois. Size 6 in. x 9 in., cloth binding, 134 illustrations. 340 pages. Published by the McGraw-Hill Book Company, New York City. Price, \$3.

The author is a professor who has had practical experience. The book is based on a series of class room notes which have been very greatly expanded, and in addition it includes compilations of data from various sources. The book is divided into two parts, the first covering scrapers, graders and shovels, and the second, dredges. The first part is divided into five chapters on drag wheel scrapers, road or scraping graders, elevating graders, capstan plows and steam shovels. The second part divides dredges into two classes, dry land excavators and floating excavators, the first class including scraper excavators, templet excavators, wheel excavators, tower excavators and walking dredges. The floating excavators include dipper dredges, ladder dredges and suction dredges. Trench excavators and levee builders are considered in separate chapters. The list of machines discussed is very complete and the detailed description of parts and methods of operation, with the discussions of comparative value and cost data that are included, should be interesting to many engineers. A large part of the data referring to service records is drawn from reclamation and highway work, since, as a rule, much more complete cost keeping systems are in use on such work than on railways. A great deal of the data is equally applicable to railroad construction.

Beaver's Railway Distance and Speed Table. By J. D. Beaver. Buffalo, N. Y.: Baker, Jones & Co. Leather, 3½ in. by 7½ in. Price \$1.

This is a thin pocket book containing a dozen tables of the kind used, in making time tables, to check the accuracy of the times taken from the string board. The 12 tables, together, show the time required to travel any distance from one-tenth of a mile to ten miles; and at 24 rates of speed from four miles an hour to 100 miles an hour. For each rate of speed there are 100 items: that is to say, each item represents a distance only one-tenth of a mile more than that on the preceding line. The peculiar merits of the book are the thumb-index, by which the page containing a particular rate is quickly found; and the use of red ink on each alternate page, which still further facilitates quick work. (All tables are on right-hand pages, all left-hand pages being blank.) For example to find the time required to travel 1.3 miles, 3.8 miles or 5 miles at 40 miles an hour, the user of the book looks for 40, on the margin, in black; while for 5.1 miles, 7.1 or 8.5 or 10 miles, at that rate he looks on the margin for 40, in red. Practice soon fixes the habit which takes advantage of this facility. For timing trains by mile posts there is a single table, in the back of the book, showing all rates from four miles an hour (15 minutes to the mile) to 100 miles an hour (36 seconds to the mile).

Important Features in Refrigerator Car Design

Well Built Equipment Properly Handled and Maintained Is Necessary for Handling Perishable Freight

During the ten years between 1901 and 1911 the tonnage of perishable freight originating on the railways of this country almost doubled. The tonnage of fruit and vegetables made the greatest increase. In 1901 the traffic in these commodities, according to the reports of the Interstate Commerce Commission, was 5,846,184 tons; and in 1911, it was 11,747,009 tons, an increase of 101 per cent. As is shown by the accompanying table, fruit and vegetables were the greatest of the sources of revenue represented by the perishable freight traffic. They are also those

	1901	1911
Fruit and vegetables.....	5,846,184	11,747,009
Dressed meats	1,763,284	2,329,814
Other packing house products.....	2,097,593	2,249,082
Poultry, game and fish.....	612,737	718,902
Other products of animals.....	1,040,922	3,002,591
Wines, liquors and beers.....	2,465,363	3,769,382

commodities in the transportation of which the railway companies' refrigerator cars are most used. Most of the other per-

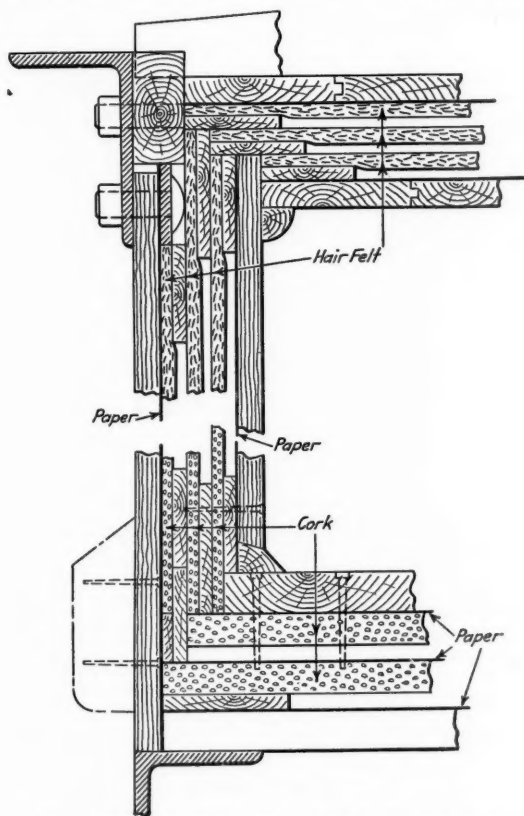


Fig. 1—Section Through Side Sill and Plate Showing the Method of Applying the Insulation to Pennsylvania Steel Frame Cars

ishable freight mentioned requires special types of cars that are generally provided by the private car lines.

Although in earlier years the private car lines handled a very large percentage of the fruit and vegetable business, the railways have been handling more and more of this freight in their own cars each year. This is indicated in a general way by the increase in the number of refrigerator cars owned by the railways, as shown in the Interstate Commerce Commission's reports. In 1902 the railways owned 18,222 such cars which had an aggregate capacity of 472,635 tons. This number had grown to 31,786 in 1911, with an aggregate capacity of 964,994 tons, an increase of about 75 per cent. in number, and of 104 per cent. in capacity during the nine years. More recent figures show that on January 1, 1913, all classes of refrigerator cars were distributed as follows: Private car lines owned 38,105, railways owned 48,926, and

car lines owned or controlled by railways owned 16,477, showing that the railways now control 63 per cent. of the refrigerator equipment.

In this connection it is interesting to note the trend of refrigerator car construction during the past three years. During that time 38,770 refrigerator cars were built by both the private car lines and the railroads. The capacities of 7,000 of these were not obtainable. Of the rest, 3.3 per cent. were of less than 60,000 lb. capacity, 57 per cent. were of 60,000 lb. capacity, 8.2 per cent. were of 70,000 lb. capacity, 25 per cent. were of 80,000 lb. capacity, and 6.5 per cent. were of 90,000 lb. capacity. Of the

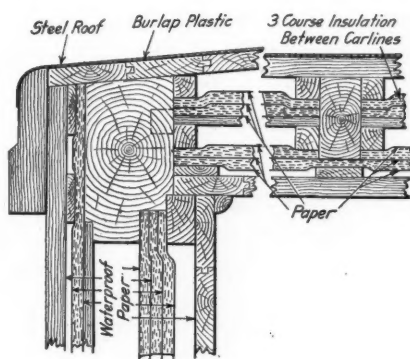
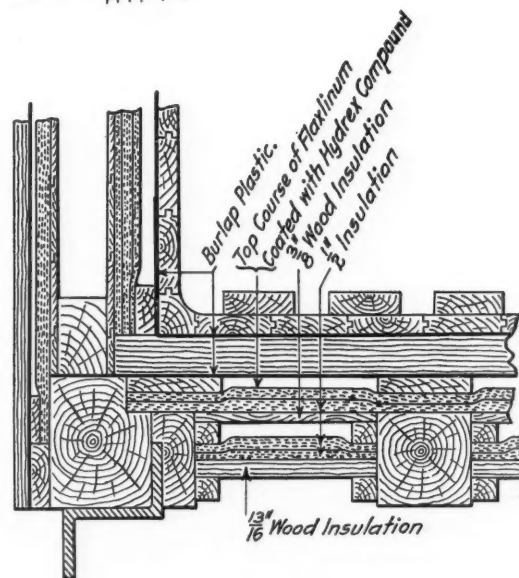


Fig. 2—Sections Through Merchants Despatch Transportation Company's Dairy Car

total of 38,770 cars, 21,941 were equipped with steel underframes; 12,448 were equipped with the friction draft gear; 6,778 were equipped with the spring draft gear; 3,932 were of all-wood construction, and 505 were of steel frame and underframe construction. The following table, giving the percentages of those cars, of which information could be obtained, that were constructed with steel underframes, friction draft gears, spring draft gears, and of all wood, shows clearly the recent tendencies in construction:

	1911	1912	1913
Steel underframe	44.3 per cent.	51.7 per cent.	79.4 per cent.
Friction draft gear.....	38.3 per cent.	8.8 per cent.	89.2 per cent.
Spring draft gear.....	22.4 per cent.	21 per cent.	0.2 per cent.
All wood construction.....	29.7 per cent.	3.2 per cent.	0.2 per cent.

The two principal features that are of fundamental importance in the transportation of perishable freight are, first, the construc-



tion and design of the refrigerator car; and second, the method of handling and protecting this class of freight en route. Without a properly constructed car it is almost impossible to handle perishable freight in an efficient and satisfactory way, no matter how well organized the refrigerator car service department may be. On the other hand, it is next to impossible to handle perishable freight successfully, no matter how well designed the car may be, without some well organized department or sub-department which devotes its whole time to this class of freight.

Refrigeration is a science which requires a certain amount of careful study if it is to be successfully applied to railway equipment. Perishable freight, if not given the proper protection and

As business of this nature has grown, many roads have found it expedient and profitable to put the handling of the refrigerator equipment in the hands of a separate department or organization such as the Santa Fe Refrigerator Despatch, Pacific Fruit Express, Central Fruit Despatch, which handle the perishable freight traffic for the Santa Fe, Southern Pacific and Illinois Central, respectively.

A good example of such a department is the Santa Fe Refrigerator Despatch, which cares for all refrigerator cars passing over the entire Santa Fe system, and handles all perishable freight originating on the system, whether shipped in railway or private line cars. It operates 9,037 cars, and has an organization consisting of a manager, seven traveling agents, day and night inspectors at each icing station, and office clerks at Chicago who handle the car despatching and keep the car records. The traveling agents are assisted in the rush season by extra men, such as experienced freight agents, who are familiar with the general handling of freight and who have sufficient knowledge of the perishable freight business to qualify for this work.

The efficiency to which such an organization may be raised is

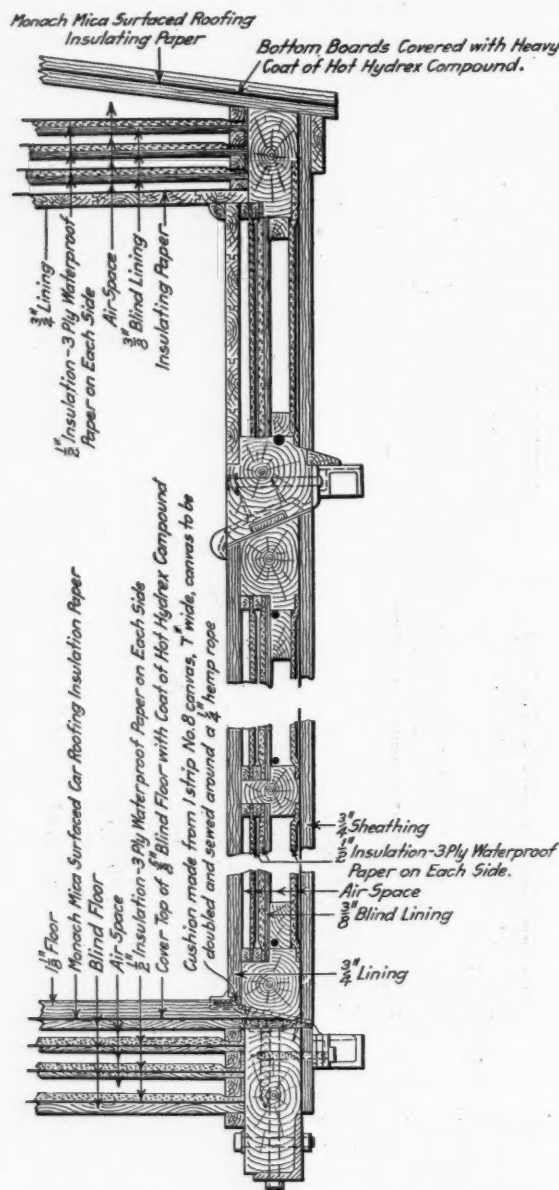


Fig. 3—Section Through Door of Pacific Fruit Express Refrigerator Car

care, will produce more claims per unit of neglect than any other class of freight. It is not enough to get the cars over the road with the least possible amount of physical damage; certain definite temperatures must be maintained in them, despite the varying weather conditions through which they pass. The penalty for neglect is seldom slight; it usually is figured in units of car load lots, instead of in units of the packages that go to make up the car load, which with the high value placed on this class of commodities, tends to make heavy claims. It is therefore evident that in order to show a satisfactory profit from this class of business it must be handled in a careful and systematic manner.

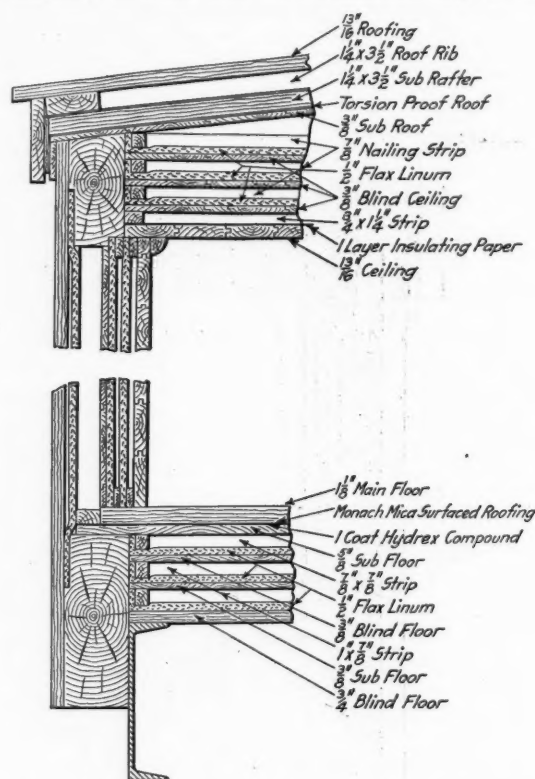


Fig. 4—Section Through Sides of Illinois Central Provision Car

well illustrated by the comparatively small amount of the loss and damage claims paid on the Santa Fe on account of perishable freight during the fiscal year ending June 30, 1913. During that year the revenue from this class of freight was \$7,567,718, and the claims paid for all causes were \$192,519, or but 2.5 per cent. of the perishable freight revenue. Of these claims less than 0.5 per cent. were on account of improper refrigeration. While this 2.5 per cent. may seem large when compared with the claims paid on account of other classes of freight, it is not large when compared with what is generally paid on account of this class of freight by many other roads that do not maintain similar departments. Two other roads having similar organizations, and whose perishable freight revenue is about half that of the Santa Fe report perishable freight claims of 2.74 per cent. and 5.6 per cent., respectively, of the revenue derived by them from this class of traffic.

REFRIGERATOR CAR CONSTRUCTION

There are differences of opinion regarding the most desirable weights of cars, kinds of insulation, types of icing arrangements,

etc., but all experts are agreed that refrigerator cars must be very carefully designed, very well built and very carefully maintained. A refrigerator car is a cold storage plant on wheels,

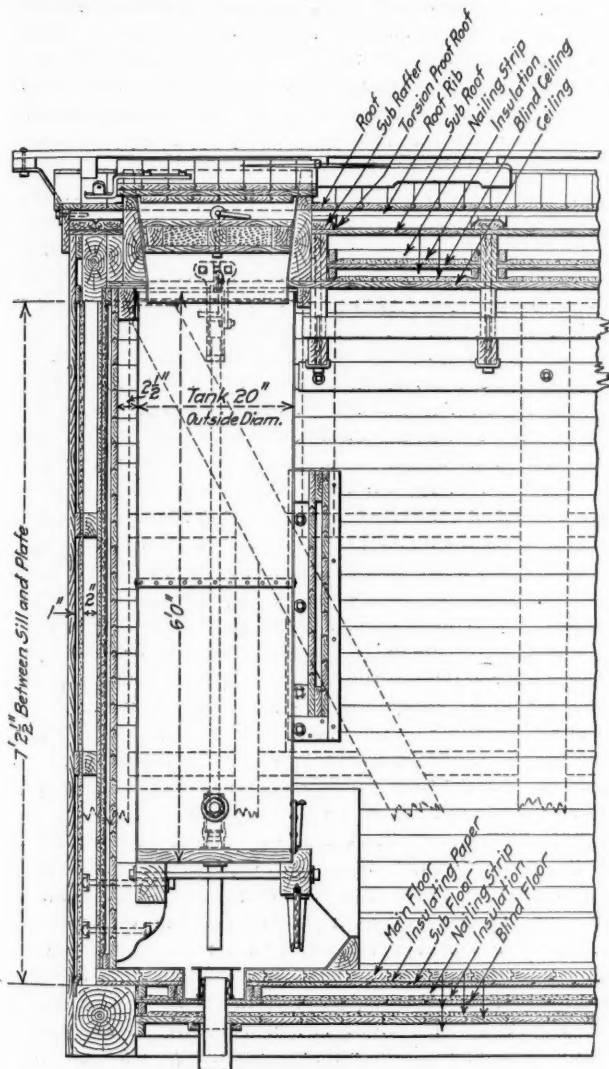


Fig. 5—Tank End of American Car & Foundry Company's Standard Beef Car.

but its service is such that what might be entirely practical for an ordinary cold storage plant may not be practical in a refrigerator car. Likewise the general type of box car construction

cannot be followed in all its details in the construction of the refrigerator car. A refrigerator car is heavier than a box car of the same general proportions and capacity because of the added weight of the insulation; and this should be considered in designing the trucks to be used under refrigerator cars. A refrigerator car built to the general design of a box car of a given capacity may never be loaded to the limit of this capacity with perishable freight, the extra weight of the insulation and ice being considered. But trouble comes when such a car is used in other than refrigerator service; for then it is very apt to be overloaded. For this reason some roads have rated their

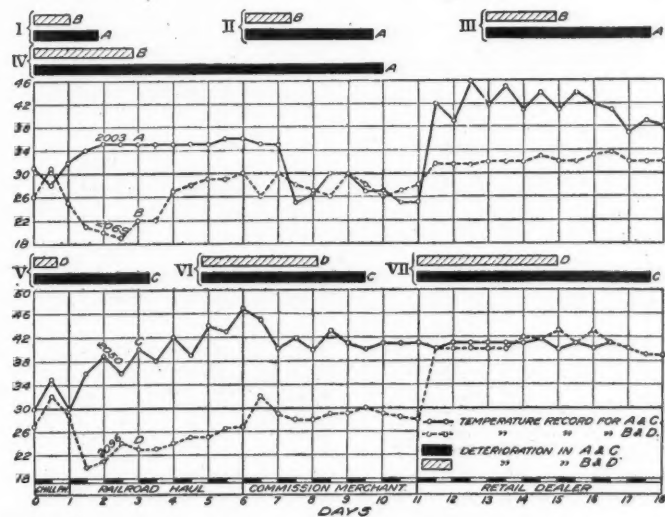


Fig. 7—Deterioration as Shown by Ammoniacal Nitrogen Content of High Temperature and Low Temperature Shipments and Market Temperature Records.

Two shipments held at similar temperatures in commission house: No. 2003, A=high temperature shipment; No. 2069, B=low temperature shipment. Condition based on analyses: I, at end of railroad haul; II, at end of period at commission house III, after four days at retail store; IV, after seven days at retail store.

Two shipments held at similar temperatures in retail store: No. 2050, C=high temperature shipment; No. 2096, D=low temperature shipment. Condition based on analyses: V, at end of railroad haul; VI, after four days at retail store; VII, after seven days at retail store.

refrigerator cars below the rated capacity of the trucks, which would seem to be good practice.

The extra weight of the refrigerator cars is wholly carried in the superstructure, which, together with the high or suspended loads usually carried, will raise the center of gravity of the car an appreciable amount. This has at one time or another caused a large number of derailments, but has been overcome almost entirely by decreasing the distance between the side bearings,

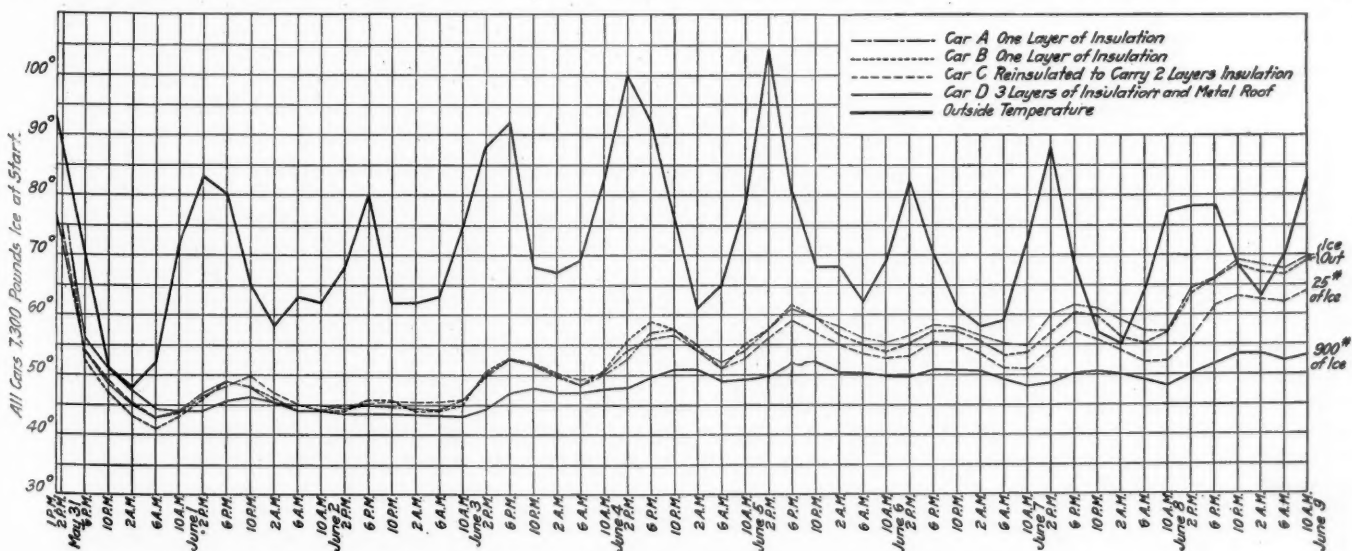


Fig. 6—Curves Showing the Results of Insulation Test of Refrigerator Cars.

having them come well inside of the rails. The standard practice in this regard seems to be 48 in., or 2 ft. each side of the center of the truck, with a clearance of $\frac{1}{4}$ in. to $\frac{3}{8}$ in. Some car designers are strongly in favor of roller side bearings or some anti-friction arrangement that will assist the trucks in traversing curves, as the refrigerator car bodies are of such rigid construction that they will not ease off from the side of the truck as it strikes the elevated outer rail of a curve.

A difficulty that has been experienced by many roads is that of keeping refrigerator cars clean and free from permeating odors. One car company has had a very good success in this regard by applying two coats of hot linseed oil to the inside sheathing of the car and covering this with a good grade of varnish. The oil will be absorbed as soon as applied, closing the pores of the wood, and thereby preventing any material amount of absorption of any odors. In addition to this the cars are kept clean with ordinary soap and water.

One of the secrets of success in refrigerator car construction is the building of a car that will withstand all the shocks and torsional strains that may be given to a car in service, without opening up cracks in the superstructure that will in any way interfere with the insulating properties of the car. To attain this requires the best possible workmanship, together with a high

absorbed by them. Special care should be given to the floors in this respect. Many car builders apply a hot asphalt compound just beneath the top flooring to give additional protection, and also extend the waterproof paper used in the floor some six or eight inches up on the sides of the car to prevent any moisture on the floor from working up into the side insulation. It will be noticed in the accompanying illustrations of the various types of refrigerator car construction that one car company also uses this compound between the roof boards. In applying the insulation the best practice is to wrap it around the nailing strips in the corners so as to make a more compact joint. Every effort should be made to have all the air spaces so sealed that there will be absolutely no circulation. Some builders recommend the addition of a light insulation in the air space formed by the framing of the car, to eliminate any danger of air circulation at that place.

The refrigerator cars recently built for the Pennsylvania illustrate the method of applying insulation to the steel frame car, sections through the side of the car being shown in Fig. 1. Cork and hair felt are used for insulation. The cork is used in the flooring and 12 in. up on the sides and ends. The hair felt is used for the rest of the sides and ends, and for the roof. The sub-floor is $1\frac{1}{4}$ in. thick. A $\frac{7}{16}$ in. air space is provided between it and the bottom layer of 1 in. cork board. The upper layer of cork board is of the same thickness and is $\frac{7}{16}$ in. above the bottom layer, thus providing a second air space. The main flooring is placed directly on top of the upper layer of cork board. Waterproof paper is placed on top of the sub-flooring and each of the layers of cork board. The sides have an overall thickness of $4\frac{1}{16}$ in. and are made up of an outside and inside sheathing of $\frac{13}{16}$ in. material, three $\frac{1}{2}$ in. layers of hair felt and three $\frac{5}{16}$ in. air spaces, with three layers of $\frac{3}{8}$ in. cork board in the lower 12 in. instead of the hair felt. The hair felt is held in place by four sets of 3 in. x $\frac{7}{8}$ in. strippings located at the top and bottom and one-third the distance between the top and bottom. In addition there are diagonal strippings of the same material set at an angle of 60 deg. to the side sill and spaced 12 in. apart. The ceiling is the same as the sides with the exception that hair felt being used for the entire width of the car. It will be noted that the insulation joints at the upper corners of the siding are staggered so that a more efficient joint may be obtained. The ceiling is nailed directly to the carlines, the insulation and false ceilings extending between them. Diagonal strippings extend between the carlines to support the insulation. These cars are provided with a steel frame and underframe and friction draft gear. They weigh approximately 60,500 lb. and have a rated capacity of 90,000 lb. They are of practically the same general construction as the standard Pennsylvania steel frame box cars.

The refrigerator cars for dairy service built recently for the Merchants Despatch Transportation Company are provided with four layers of insulation. A section of these cars is shown in Fig. 2. The outside layer of insulation is carried from the extreme top of the face plate down to $2\frac{3}{4}$ in. below the top of the side sill. A $\frac{1}{4}$ in. air space is left between this layer and the outside sheathing. On the inside this layer is backed up with a $\frac{3}{8}$ in. insulation sheathing which is nailed directly to the side framing. Inside of the framing the other three layers are applied directly on top of each other, being separated by a layer of heavy waterproofing paper. An air space of $\frac{7}{8}$ in. is provided between this insulation and the inside sheathing. The total width through the side of the car is $7\frac{1}{2}$ in. The insulation in the roof is divided into two parts of two layers each. A $\frac{1}{4}$ in. air space is provided between the ceiling and the first two layers, and a $\frac{7}{8}$ in. air space between these layers and a $\frac{3}{8}$ in. insulation lining. The other two layers of insulation are applied directly to this lining. The upper three layers of this insulation extend only between the carlines, but the bottom layer extends underneath them and for the full length of the car. This is done to insure against any possible chance of air leaking through any of the joints of the insulation at the carlines.

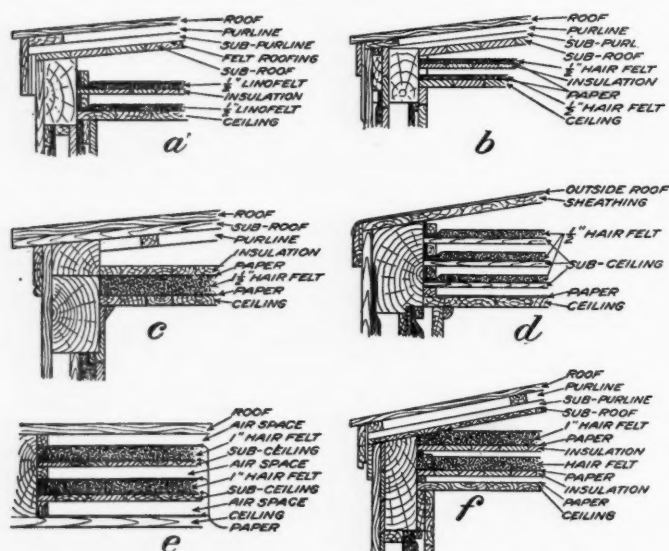


Fig. 8—Cross Sections Showing Roof Insulation of Different Types of Refrigerator Cars.

a, type A; b, type B; c, type C; d, roof insulation separated into three layers; e, roof insulation with 2 in. of hair felt; f, type D.

grade of material. At the same time if the cars are not properly maintained their efficiency will be greatly reduced and the beneficial effects of up-to-date and scientific construction destroyed. Refrigerator cars are built with the definite purpose of protecting in transportation perishable products, the damage claims on account of which, if they are not properly protected, may cost the carrier more than is received in revenue. Therefore, cheapness of construction in such cars may be, and usually is, a most extravagant economy.

INSULATION

The most vulnerable part of a refrigerator car is the insulation. Unless it is applied correctly and substantially it is very apt to break away after the car has been in service awhile, which, of course, greatly decreases the efficiency of the car. There are several kinds of insulation that have been used, including cork, hair, flax fiber and wool felt. While cork has the best insulating qualities it has been found difficult properly to maintain a car insulated with it. Hair and flax fiber are more generally used as they withstand better the weaving and torsional strains to which a car is subjected. It is, however, advisable to protect them amply by waterproof paper to prevent any moisture from being

The floor of this car is provided with four layers of insulation with two layers extending across the car on top of the intermediate sills without joints. The other two layers are placed on 13/16 in. wood insulation between the longitudinal sills. Air spaces are provided between two lower layers of insulation, between the 3/8 in. intermediate wood insulation and between the upper layers of insulation and the 1 3/4 in. flooring. A layer of plastic burlap is applied between the 1 3/4 in. flooring and the top course, which extends 6 in. up the side of the car just outside the inside sheathing to prevent any moisture, that may permeate through the floor, from reaching the side insulation. These cars weigh 55,000 lb. and have a capacity of 80,000 lb. They are provided with steel roofs, steel underframes, roller side bearings and friction draft gears.

A cross section of the Pacific Fruit Express refrigerator cars is shown in Fig. 3. This section was taken through the door in order to show a good example of refrigerator car door construction. These cars are provided with three layers of insulation in the sides, ends, roof and floor. Air spaces are provided between the layers of insulation, and a layer of three-ply waterproofing paper is applied on the inside of each layer in the sides and roof. In the floor this paper is applied on the outside of each layer of insulation. The insulation is wrapped around the nailing strips in the roof and floor, and extends between the carlines in the roof and between the floor sills in the floor. The outside roof is made up of two layers of 3/4 in. boards, the bottom boards being covered with a heavy coat of hot Hydrex compound and a layer of Monarch mica covered roofing insulating paper. The door is made with three layers of insulation applied in the same manner as in the sides of the car. These cars have a light weight of about 47,000 lb. and at rated capacity of 60,000 lb. They are 42 ft. over end sills and are equipped with a steel underframe.

The fruit cars used by the Santa Fe Refrigerator Despatch Company have two layers of insulation in the sides and ends, and three layers in the floor and roof. The sides of the car consist of a 13/16 in. outside sheathing, an air space, waterproof paper, 1/2 in. flax felt, an air space, 3/8 in. wooden insulation, waterproof paper, 1/2 in. flax, air space, and 13/16 in. inside sheathing. The roof is made up of a 5/8 in. ceiling laid directly on the carlines. The insulation extends between the carlines and is made up of three layers of 1/2 in. flax felt, the upper two of which are laid on 3/8 in. wooden insulation, air spaces above each layer of felt insulation and waterproof paper on the under side of each layer of felt. The felt insulation is wrapped around the nailing strip at the carlines and side plate, which makes a more compact joint. The floor is of substantially the same construction as the roof, the insulation being applied between the floor sills. The false flooring is of 13/16 in. material and the main floor of 1 3/4 in. material. These cars are 41 ft. 3 in. over end sills, and have a capacity of 60,000 lb. They are provided with steel underframes, friction draft gears and steel roofs.

The provision car recently built for the Illinois Central affords a good example of the application of three layers of insulation. The car has a rated capacity of 60,000 lb., but it is equipped with 40-ton trucks, its light weight being 53,200 lb. It is provided with a built up steel underframe of the fish-belly girder type, the depth of the girders at the center being 24 in. and spaced 12 1/4 in. apart. As will be noted from the section through the side of the car, shown in Fig. 4, every means is taken to insure a positive seal between the outside and inside of the car. The outside layer of insulation on the sides and ends extends down 3 3/4 in. below the top of the side sills and 1 3/4 in. below the top of the end sills—the sills being rabbeted out for this purpose—and is firmly held between the sills and the sheathing. In roof and floor the insulation is lapped around the nailing strips at each joint of the insulation, which provides the best insulated joint. The insulation in the floor is divided into five sections which extend the full length of the car, and are separated by the intermediate longitudinal sills. The insulation in the roof extends across the car in one piece, being fitted in

between the carlines. The construction of the sides, floor and roof is plainly indicated in the illustration. This car is 41 ft. over all and has an inside capacity of 2,040 cu. ft. between the tanks and a total capacity of 2,436 cu. ft. It is provided with a friction draft gear, roller side bearings, and the roller device as applied by the Barber Steel Car Truck Company.

The American Car & Foundry Company's standard design of 36 ft. beef car is shown in Fig. 5. This type of car requires a low temperature, and for this reason it is necessary to use tanks so that the ice may be mixed with the necessary amount of salt. The drawing is a section through a tank at the end of the car, and shows the insulation of the floor, roof and end. The side insulation is the same as that in the ends of the car, and there are two layers of 1/2 in. insulation in all of the walls. The outside layer in the ends and sides overlaps the side plate and side sills. The insulation in the roof extends from side plate to side plate between the carlines. The insulation in the floor extends the length of the car in between the floor sills. The insulation in the roof and floor is lapped over the nailing strips, which is the generally accepted practice. A tank apron about 2 1/2 ft. high extends across the car about 2 in. or 3 in. in front of them for protection and to aid in the circulation of the air throughout the car. Some car builders provide an insulated bulkhead at this place. There are four tanks provided in each end of the car. Each tank is connected to the one alongside of it by a 1 1/2 in. pipe located a short distance above the bottom.

INSULATION TESTS

An interesting test of the direct value the number of layers of insulation may have in a refrigerator car is shown in Fig. 6. The purpose of this test was to determine whether or not it would be advisable to add an extra layer of insulation to some one-layer cars and to compare their efficiency with that of a car provided with three layers of insulation. The test was a standing test and the cars were empty, which accounts for the rapid drop in temperature directly after they were iced. The one and two-layer cars were of the same series, being about seven years old. The two-layer car had originally only one layer, the second layer being applied just under the outside sheathing and under the old ceiling, a new ceiling being applied. The car with the three layers of insulation was about one year old, being built in 1910. Car A was equipped with solid bulkhead bunkers, and had a series of pipes on the floor through which the water passed from the ice before it left the car. Cars B, C and D were equipped with a syphon type of bulkhead. All four cars were iced at the same time with 7,300 lb. of ice and the temperatures were read every four hours thereafter. Each car had six thermometers located as follows: Two at each end 3 ft. from the ice box, the top one 9 in. from the ceiling and the bottom one 12 in. from the floor; two in the center of the car arranged at the same height as those at the ends.

These cars were used in a service that required a temperature of around 48 deg., and from the diagram it will be seen that in the one-ply car this temperature was maintained for 18 hours and 30 minutes; in the two-ply car, 68 hours, and in the three-ply car, 115 hours and 30 minutes. The ice lasted 196 hours in the one-ply car; 216 hours in the two-ply car, and 236 hours in the three-ply car. The average amount of claims paid per car during the ten months from January to December exclusive for insufficient refrigeration was \$8.22 for the one-ply cars and \$2.95 for the three-ply cars. The claims paid because of freezing were \$4.22 for the one-ply cars and \$1.32 for the three-ply cars. This clearly shows the necessity of having adequate insulation.

In 1908 road tests were made on two Pacific Fruit Express cars. One of these had two layers of 1/2 in. Linofelt and the other had six layers of the same insulation. Each was loaded with 28,512 lb. of Valencia oranges at Narod, Cal. They were precooled at Los Angeles to 50.7 deg. and 51.3 deg., respectively. They then made a nine days' journey to Chicago through an average outside temperature of 68 deg. The two-layer car consumed 12,055 lb. of ice and the six-layer car 8,410 lb. On arrival

at Chicago the temperature of the oranges in the two-layer car was reduced to 42.14 deg. and in the six-layer car to 43.6 deg. The test report then states that the heat transmission through the two-layer car was an average of 5.1 B. t. u. per sq. ft. of exposed surface per 24 hours per degree of difference between the outside and inside temperatures. For the six-layer car the amount of heat transmission was only 3 B. t. u.

A curve showing the continuous record of temperatures throughout the journey indicates that the six-layer car will maintain a more even temperature than the two-layer car. The maximum variation per 24 hrs. was 2 deg. in the six-layer car and 6 deg. in the two-layer car, the greatest variation in the outside temperature in the same period of time being about 28 deg. The inside temperature of the two-layer car was constantly varying with the outside temperature, while that of the six-layer car showed almost no effect from the daily outside variations. It was also found that the six-layer car was able to maintain a more even temperature throughout the load, the difference between the top of the car and the bottom at the middle being only 4 deg., while in the two-layer car this difference was 10 deg.

Experiments have been made by the United States Department of Agriculture regarding the refrigeration of dressed poultry in transit, which have been published in its Bulletin No. 17. They covered a period between August, 1909, and October, 1912, and included 120 car-lot shipments, each car making between 1,000 and 1,500 miles. Immediately after dressing, the poultry was placed in chill rooms cooled to 32 deg. F. and held there 24 hours, in order to remove all the animal heat. The cars were iced 24 hours before loading, the proportion of salt varying between 5 and 15 per cent., depending on the weather. The top of the load near the center of the car was found to be the warmest point. The condition of the poultry was determined by chemical analysis. Four typical shipments are illustrated in Fig. 7 to show the effect of differences in temperature. The rectangular bars indicate the relative deterioration, the solid bars standing for the comparatively high temperature shipments and the frame bars for comparatively low temperature shipments.

The cars used were from six different companies, and from the records obtained the relative efficiencies of four distinct types of cars were obtained as follows: Type A, 0.71; type B, 0.62; type C, 1.03; and type D, 1.19. The walls of type A consisted of a 13/16 in. siding, fiber paper, air space, 1/2 in. Linofelt, air space for framing, wooden sub-lining, 1/2 in. Linofelt, air space, fiber paper, and the inside lining. Those of type B consisted of 3/8 in. siding, air space, paper, 1 in. wool felt, wooden sub-lining, air space for framing, wooden sub-lining, wood felt, paper, air space and 3/8 in. inside lining. Those of type C consisted of siding, paper, air space for framing, wooden sub-lining, paper, 1 in. hair felt, paper, and inside lining. Those of type D consisted of 3/4 in. siding, paper, 3/8 in. wooden sub-lining, air space for the framing, paper, 1 in. hair felt, paper, air space, paper, and 3/4 in. inside lining. The flooring was practically the same in all four cases, the chief differences being in the widths of the air spaces. The roofs, however, were held to be the chief points of difference, and the different constructions are shown in Fig. 8.

Each of these types was equipped with a characteristic type of bunker as follows: Type A, siphon bunker; type B, galvanized iron box, perforated to allow the air to come in contact with the ice; type C, two large reinforced wire baskets with an insulated wall having an opening at the top and bottom; type D, iron tanks in which the crushed ice and salt may become thoroughly mixed. The D type showed a more even temperature throughout the car with the exception of the cars of that type which had been in service for a number of years. The efficiency of the old cars dropped to as low as 0.56 and 0.87, as compared with 1.19, the average for type D. Other cars showed a difference of some 8 or 10 deg. between the top center and bunker positions, which is equivalent to five or six days on the market. It was also found that with the same thickness of insulation the cars of smaller cubic capacity gave the best service. An inside tempera-

ture of less than 31 deg. was found to give the best results for poultry being hauled long distances.

PRECOOLING

The precooling of perishable freight before it is placed in refrigerator cars has become recognized as very desirable. There are certain classes of perishable freight, such as meats, dairy products, etc., with which it is absolutely necessary to do this. In these cases the precooling is usually done in cold storage warehouses, and the cars iced for a sufficient time before loading to insure the proper temperature inside the car when the products are loaded. In the case of fruits and vegetables, while precooling is very desirable it is not absolutely necessary. A carload of fruit will probably take two or three days to reduce down to the proper temperature if loaded without precooling, whereas by precooling either in the car or in the cold storage warehouse, this reduction of temperature may be accomplished in a much quicker time.

The Pacific Fruit Express and the Santa Fe Refrigerator Despatch maintain large precooling stations at strategic points in California. These stations contain refrigerating plants and are connected to the cars loaded with fruit through a series of ducts. A main duct is connected through a flexible joint to the door of the car and a return duct from the hatches at each end. Refrigerated air is drawn in at the doors and sucked out at the hatches. By this system it is possible to cool a car in about three hours, several cars being precooled at one time. The cars are then iced to their full capacity, and will usually make the trip from California to Chicago with this initial icing. The advantage of precooling is that it permits of carrying a much more profitable grade of fruit. When the fruit is to be precooled it may be allowed to ripen pretty completely on the trees before it is picked, whereas fruit that is to be cooled in the refrigerator cars must be picked more or less green and allowed to ripen during transit or after it reaches its destination, which makes a less marketable commodity.

Portable precooling stations have been experimented with, but have not been found to be practical from a commercial standpoint, as usually they are only able to precool two cars at a time, and the length of time required is about three or four hours. When cars are loaded from a cold storage warehouse they should be iced 24 hours before they are loaded to insure the temperature of the car being down to the proper point, and in refrigerating fruit in a car from its field temperature it is often advisable to use 5 to 10 per cent. of salt so as to hasten the cooling; but after the car's temperature is down to the proper point the salt and brine should be entirely removed and pure ice put in.

ICING SYSTEMS

Not only must a refrigerator car be well built and well insulated, but the icing arrangement must be such that the cold air will be well circulated throughout the car. Proper circulation will not only keep the contents of the car at a uniform temperature, but will also carry away the moisture given off by the contents, which, of course, is necessary for the protection of the contents, especially fruit and vegetables. When these products are loaded in a refrigerator car without any precooling it is usually advisable to ventilate the car to the first icing station in order to eliminate the moisture given off by the warm products.

There are two methods of carrying the ice in refrigerator cars: in bunkers at the ends of the cars, and in bunkers located just under the ceiling. The latter system is being used by some roads, but the most common arrangement is that of carrying the ice behind bulkheads in the ends of the car. There are two types of bulkheads in general use, the solid insulated bulkhead and the siphon bulkhead; and the users of both claim satisfactory circulation. The solid bulkhead has openings at the top and bottom; and the cold air, dropping of its own weight, will pass out of the bunker and into the car through the lower opening, returning, as it becomes warm, through the upper opening. The siphon system

consists of a series of openings through the bulkhead so constructed that the returning air will be drawn in by the suction caused by the cold air, behind the bulkhead, falling to the floor of the car.

HEATER CARS

While the demand for heater cars is not nearly as great as for cars under ice, it is often necessary to provide some means of protecting perishable freight from the cold. Some roads heat the cars at the loading points, relying on the insulation to hold the heat until the car reaches its destination. This system is quite satisfactory in moderate temperatures, but under more severe conditions it is necessary to place some portable heater in the car and carry it to the destination. At a slight additional expense it would be possible to construct refrigerator cars with a scientific system of heating, and as this class of traffic grows such systems probably will be more common. Refrigerator cars having the overhead icing system are also provided with a heater system. The inside sheathing of this design of car is wholly surrounded by an air space through which the cold air in summer, and the hot air, when the heater is used, circulate. In addition, provision is made for direct circulation in the inside of the car.

Other designs are also used for combination refrigerator and heater cars. There is a system that may be readily applied to any existing refrigerator cars by the simple addition of a series of four ducts in the floor, extending from the heater units in the middle of the car to the end bunkers. Two of the ducts deliver the heated air to the bunkers about half way up the end of the car; the other two are the return ducts, and extend but a short distance up from the floor on the end walls. The heat from the delivering ducts will rise to the top of the bunker and pass over the top of the bulkhead, and as it becomes cooled, it will return through the bottom of the bulkhead, returning to the heater through the return ducts.

The past three years have seen a marked improvement in the design of refrigerator cars. It is of great importance now that these cars be carefully built and maintained in order that the greatest benefit may be derived from these improvements in design. In order to get the best results it will also be necessary that refrigerator cars be carefully operated when carrying perishable freight. This involves proper icing in summer and proper heating in winter. From the shipper's standpoint, which should also be that of the railways, the cars should be carefully despatched to the loading territories. The large and constantly increasing perishable freight traffic requires for its proper handling an efficient car service bureau. This class of business, because of its rapid development, probably will require close watching so that enough refrigerator cars may be built in the future to care for it. The transportation of perishable freight requires more attention than that of any other class of freight traffic, and without this attention it may cost the railways large sums of money in the form of freight claim payments.

REFRIGERATOR CAR LINES IN RUSSIA.—The Ministry of Ways of Communication of Russia has recently authorized the purchase of 17,000 ordinary freight cars, 1,400 passenger cars, and 700 refrigerator cars for the government railways. At the present time the use of refrigerator cars is not common in that country. Negotiations are now in progress for the establishment of some refrigerator line routes, and during the year there are to be some experimental runs. In May there will be a trial run between Samarkand-Tashkent-Moscow-St. Petersburg of a train of six or seven cars—four for Turkestan fruit, one or two for fish, and one for mutton. In July there will be a trial run from Siberia to Moscow-St. Petersburg and Warsaw. The train will start from Krasnoyarsk and take up shipments of meat, fish, game, butter and eggs from various cities on the Siberian track. The shipments will be directed to Warsaw in order to ascertain the possibility of exporting Siberian products. The third trial run will take place in August from the Crimea to Moscow and St. Petersburg. The train will carry Crimean fruit, meat and eggs.

THE RATE ADVANCE CASE

The Interstate Commerce Commission resumed hearings on January 26 on the application of the Eastern carriers for increased freight rates.

Representatives of the National Petroleum Association appeared and protested against the proposed increase. Among other things they said that the increases in some instances amounted to as much as 20 per cent.

F. W. Boltz, traffic manager for the National Petroleum Association, was the principal witness. He asserted that the average increase sought was in excess of 5 per cent. He said the increase would result in giving the Standard Oil Company an added advantage over the association which he represented, which was made up of independent producers.

Cross-examined by George S. Patterson, representing the Pennsylvania line, and O. E. Butterfield, representing the New York Central, Mr. Boltz admitted that he did not charge that the railroads were acting in concert to aid the Standard Oil Company, but that nevertheless if the increases went into effect it would have this effect.

T. R. Westgate, manager of the American Oil Works of Titusville, Pa.; Robert C. Pew, representing the Sun company of Toledo, and L. B. Gotwals of the Union Petroleum Company of Philadelphia testified that the cost of transporting oils did not justify the proposed increase.

The Standard Oil Company did not make any application to be heard at today's hearing, and Louis D. Brandeis, who represents the commission in the proceedings, said he did not think the Standard would ask to be heard.

The Pittsburgh Coal Company presented a protest against the proposed increase, and in substance asked to have the rates on bituminous coal, both east and west, made the subject of a separate and distinct inquiry. Attention was directed to the fact that the commission had reduced the rates on lake cargo coal from the Pittsburgh district from 83 cents to 78 cents a ton. The railroads now seek to increase this rate from 78 to 83. This, it was contended, would increase present rates of less than \$1 a ton not 5 per cent., but 5 cents.

On Tuesday the representatives of certain large shippers of ice introduced witnesses to show that inefficient service furnished natural ice shippers in the East costs both railways and patrons vast sums annually. The ice shippers asserted that with proper attention the carriers could reduce the rates and yet reap a greater profit on the business.

H. W. Bahrenburg, Hoboken, N. J., president of the Natural Ice Association of America and head of the Mountain Ice Company, the largest individual shipper in the territory, said the business would not stand the proposed advance. He said the records showed that irregular shipments, deficient equipment and slow handling added 6 per cent. of the rates to the carrier's cost of handling.

NEW RAILWAY OFFICE BUILDING FOR INDIAN RAILWAY.—The Madras & Southern Mahratta, in the south of India, has begun the construction of a commodious modern office building on an entire city block immediately adjacent to the central railway station in Madras. The building will be 480 ft. long x 204 ft. wide. It will have three stories and wide verandas around three sides of the exterior. The main staircase will occupy the center and will be lighted by a lofty dome 42 ft. in diameter, while eight corner towers will likewise be topped by domes. The estimated cost of the land, the building, and various outlying structures will be \$550,000. The Madras & Southern Mahratta lines are mainly in the Indian peninsula. It operates 1,520 miles of meter-gage line and about 1,000 miles of broad 5 ft. 6 in. gage line. The general offices of the company are in London, but the main offices in India are in Madras, and will be housed in the new building when it is completed.

The St. Louis & San Francisco Receivership

The Interstate Commerce Commission's Report to the Senate Emphasizes the Frisco's Poor Financial Program

The following abstracts are taken from the Interstate Commerce Commission report to the Senate of the United States:

A receiver for the St. Louis & San Francisco hereinafter referred to as the Frisco, was applied for on May 27, 1913, in a petition signed by James Campbell, vice-president and director of that company and president of the North American Company, of New York. The basis of the petition was default on a six months' 6 per cent. note issued to the North American Company by the Frisco, due April 21, 1913, for \$625,000, upon which a payment of \$225,000 was made subsequently to its due date and prior to May 27, 1913.

While this indebtedness was the nominal cause of the receivership, the true cause was the inability of the Frisco to meet the payment of the principal of its two-year 5 per cent. notes, dated June 1, 1911, due June 1, 1913, amounting to \$2,250,000, which had been sold to F. S. Mosley & Co., of Boston. These notes were secured by \$2,500,000 par value of Frisco-Chicago & Eastern Illinois common-stock trust certificates, and \$1,490,000 Frisco-Kansas City, Fort Scott & Memphis preferred-stock trust certificates, which were pledged as collateral security therefor with the Old Colony Trust Company of Boston.

The collateral underlying the note upon which the default occurred was deemed insufficient by the holders thereof, and on May 20, 1913, on the demand of Campbell that the Frisco deposit additional collateral, \$5,000,000 of the capital stock of the New Mexico & Arizona Land Company and \$200,000 in Frisco-New Orleans, Texas & Mexico division bonds were placed under the note as additional security. The stock of the New Mexico & Arizona Land Company stood jointly in the names of W. F. Evans and F. H. Hamilton, respectively counsel and treasurer of the Frisco. The lands consisted of more than 1,000,000 acres, located in the states named. The certificates were indorsed for transfer, the resignations of F. H. Hamilton and Alexander Douglas, the latter being vice-president in charge of the accounting department, as directors were effected upon instructions from Vice-president Hillard, and J. P. Newell and W. F. Reed, employees of James Campbell, were elected directors in their stead.

Had the Campbell note been the only obligation that the Frisco was compelled to meet it doubtless would have liquidated the indebtedness, as the cash balance of the company on May 27, 1913, amounted to \$603,859.06. But owing to the other maturing obligations which it was unable to meet, a receivership, the inevitable result of the Frisco's financial operations, and which at best could be deferred but for a short time, was applied for.

The inability of the Frisco to meet its obligations seems to have been apparent for some time prior to the application for a receivership. Strenuous efforts were made by its officers to obtain funds necessary to tide over its financial difficulties from day to day. Money was borrowed from all available sources, until it appeared that every avenue through which assistance might be secured had been exhausted. All marketable securities were either sold or pledged as collateral under the numerous loans. A statement prepared by the treasurer of the company dated April 19, 1913, shows that the estimate of receipts and requirements of the company over May 1 would result in an apparent deficiency of \$749,880, and it appears that there were in the hands of that official on April 12 unpaid vouchers aggregating \$1,681,000. On May 27 the unpaid vouchers amounted to \$2,233,635.59.

Notwithstanding this apparent exhausted financial condition and inability to meet obligations without recourse to further borrowing the Frisco sold to Speyer & Company of New York, shortly before the receivers were appointed, \$3,000,000 of its

general lien 5 per cent. bonds, French series, at a price of 78. The dates of such sales were:

April 24, 1913	\$1,000,000
May 2, 1913	1,000,000
May 10, 1913	500,000
May 14, 1913	500,000
Total	\$3,000,000

The sale of securities to the investing public through the bankers at a time when every appearance indicated the insolvency of the issuing company, invites and warrants condemnation of all those who assisted or participated in such sale. Speyer & Company should have been aware of the poverty of the Frisco and of its difficulties in obtaining funds, as they advanced that company on April 24, \$725,000 on its demand note, and \$50,000 on its demand note dated April 29, and applied the proceeds of the sale of \$1,000,000 of these bonds on May 2 to the liquidation of these notes.

While the Frisco was compelled to borrow funds from every available source it continued its policy of advancing money to companies in Texas, as is evidenced by advances made to A. T. Perkins, trustee of the Brownsville Street & Interurban and San Benito & Rio Grande Valley. The sums advanced to him during the fiscal year 1913 to the date of the receivership amounted to \$924,464.11, while \$110,297.53 was also advanced to him for the construction of the Victoria and the Heyser-Austwell extensions on the lines of the St. Louis, Brownsville & Mexico.

Under date of May 24, 1913, the Frisco paid to A. T. Perkins as trustee of the New Iberia Syndicate, \$50,000 in cash, and executed its one-year 6 per cent. note dated May 1, 1913, for \$1,493,088.83 and its 6 per cent. demand note for \$950,000, as the purchase price of the New Iberia & Northern and the Iberia, St. Mary & Eastern, in conformity with an agreement dated September 1, 1911. The Frisco had acquired in May, 1912, the syndicate interest of B. F. Yoakum in these properties by purchasing his subscription to the syndicate plus 7 per cent. interest thereon, amounting to \$212,698.24. Mr. Yoakum was paid \$12,698.24 in cash and was given a note for \$200,000, dated May 6, 1912, which was paid in cash November 6, 1912.

The difficulties of the Frisco were of a financial and not of an operating character, as, despite the increase in the net operating income from \$2,332,158.52 for the year ended June 30, 1897, to \$11,677,437.33 for 11 months of the fiscal year 1913, the surplus of income available for dividends in 1897 was \$331,065.94, while on May 27, 1913, there was a deficit of \$1,069,915.60. Had it not been for book charges covering the loss on the operation of south Texas lines for 11 months of the fiscal year 1913, amounting to \$1,219,293.21, and amortized discount of \$943,222.38, there would have been a surplus of \$1,092,599.99, or an increase in surplus for the 1913 period over the year 1897 of \$761,534.05. The operating income for the 11 months of 1913 was \$9,345,278.81 greater than that for the full year of 1897.

The absorption of the increased net operating income is accounted for by charges of \$3,140,610.94, covering the cost of the lease of the Kansas City, Fort Scott & Memphis, the Kansas City, Memphis & Birmingham, and the Kansas City, Memphis Railway & Bridge Company; and by the increase in interest on funded debt from \$1,994,488 for the year ended June 30, 1897, to \$10,684,788.55 as of June 30, 1913, an increase of \$8,690,300.55.

The gross earnings per mile of road operated increased from \$5,157 for the year ended June 30, 1897, to \$8,306 for the 11 months ended May 27, 1913, and the net earnings per mile increased during the same period from \$2,159 to \$2,733, an increase of \$574, while the funded debt interest per operated mile increased from \$1,716 for the year ended June 30, 1897, to \$2,253 for the year ended June 30, 1913, an increase of \$537.

The ratio of operating expenses to gross revenues increased from 58.30 per cent. for 1897 to 67.17 per cent. for 1912, which ratio for the last period does not indicate a relatively excessive cost of operation.

Freight earnings per mile of road increased from \$3,857.77 for the year ended June 30, 1897, to \$5,465.31 for the year ended June 30, 1912, while during the same period the revenue per ton mile decreased from \$0.01111 to \$0.00992. An increase in traffic and operating revenues had been secured, but the benefits thereof had been absorbed by increased interest charges.

The insolvency of the Frisco may be attributed to various causes.

First. Disproportionate capitalization.

Second. The acquisition of new lines.

Third. The financing by the Frisco of the New Orleans, Texas & Mexico, and other south Texas lines.

Fourth. The desire for an entrance into Chicago, Ill., resulting in the assumption of heavy fixed charges in the acquisition of the stock of the Chicago & Eastern Illinois.

Fifth. The sale of its securities at prices so low as to indicate a deplorably weakened credit or an extravagant arrangement with bankers to whom large profits accrued in the purchase of the bonds and the subsequent sale of same to the public.

Sixth. Miscellaneous causes, among which are the payment of dividends upon its preferred stock in spite of its weakened credit and need of money, poor investments and expensive rentals, among which are the investment in the New Orleans Terminal Company, stock in the Kirby Lumber Company, and rentals paid the Crawford Mining Company.

DISPROPORTIONATE CAPITALIZATION

The total capital of the Frisco on May 27, 1913, amounted to \$295,633,933.72, of which \$51,364,100 was capital stock and \$244,269,833.72 was funded debt including equipment trust notes. Capital stock was 17.37 per cent. of the total capital liability, while funded debt amounted to 82.63 per cent.

From the following comparison it will be observed that the interest-bearing liabilities of the Frisco exceeded the stock liability by 375 per cent. and were wholly disproportionate when compared with the capitalization of other carriers, including those in the territory west of the Mississippi river.

Railroad.	Funded debt.	Capital stock.	Ratio of funded debt to capital liability.
Southern ¹	\$230,213,000.00	\$180,000,000.00	56.12
Kansas City Southern ¹	47,926,000.00	51,000,000.00	48.45
Santa Fe	339,965,045.00	284,373,500.00	54.45
St. Louis Southwestern	60,366,750.00	36,500,000.00	62.32
Missouri, Kansas & Texas	126,682,346.19	76,300,300.00	62.41
Erie	230,654,187.80	176,271,300.00	56.68
Pennsylvania	260,803,607.33	453,877,900.00	36.49
Rock Island	225,125,000.00	74,877,200.00	75.04
Total	\$1,521,735,936.32	\$1,333,200,200.00	53.65

¹June 30, 1913; other quotations as of June 30, 1912.

The excessive issue by the Frisco of interest-bearing securities instead of capital stock may be due in part to the requirement of the state of Missouri that capital stock of railroads may now be sold at less than par, while no such restriction is placed upon the sale of bonds. It is also customary in issuing additional capital stock to deal with the stockholders for a portion, at least, of the new issue, while the disposition of bonds is usually a transaction with banks or bankers to whom profits accrue.

ACQUISITION OF NEW LINES

In 1897 the officials of the Frisco entered upon an era of territorial expansion and acquisition of new lines which apparently were constructed with the understanding or confident belief that the Frisco would purchase them upon completion. The mileage of the Frisco on June 30, 1897, consisted of 1,162 miles, the property having been acquired from the reorganization committee in connection with the receivership of 1896.

During the 10 years to June 30, 1907, 15 additional lines, located principally in the state of Oklahoma, were purchased.

The mileage thus acquired aggregated 2,375 miles. Some 15 miles of the original mileage were turned over to the Paris & Great Northern; making a total owned mileage, including new extensions, of 3,523 miles. These additional lines were acquired at a cost of approximately \$62,000,000. Since 1907 the expansion of the Frisco is represented by an addition of 15 miles of leased lines and trackage. This indicates that the ability of the Frisco to finance additional construction had reached its limit, or that the policy of the company had been changed.

Owing to the consolidation of the revenues and expenses of acquired lines with those of the parent company, an effort to determine whether or not the lines purchased have been profitable investments must be limited to an analysis of the records of the Frisco as a whole.

The sums paid for the properties in excess of the actual construction costs of same are not known. The costs that are shown in the records of the Frisco represent merely the cost to that company. The records of the bonuses, grants, awards, donations and syndicate profits are presumably contained in the records of the syndicates that furnished the funds for the construction companies, and the complete data were not available in this examination. The properties thus acquired are detailed with others under the caption "Franchise and property" in another section of this report.

In the acquisition of those properties divers means were employed to finance the transactions. In some cases cash was paid for the securities of the company purchased, the Frisco being eventually reimbursed for such expenditures by receiving from the trustee of the refunding or the general lien mortgages, upon a certification made to the trustee by the officials of the Frisco, bonds to equal the purchase price of the new line or in such amount as was provided in the terms of the mortgage.

In some instances the securities of the Frisco were exchanged for those of the railroad company that had constructed the line purchased. In the acquisition of the St. Louis, Memphis & Southeastern the bonds of that company and the underlying issues of its constituent companies, approximating \$16,000,000 outstanding at the time, were assumed by the Frisco.

It appears of record through statements secured from the St. Louis Union Trust Company, syndicate manager for syndicates that financed the construction of a number of properties which were subsequently sold to the Frisco, and which statements were in part supported by the testimony of witnesses, that a number of lines acquired by the Frisco were purchased by that company at prices which afforded large profits to the syndicate subscribers and trust companies. Among the subscribers to these syndicates were various officials of the Frisco, including B. F. Yoakum, chairman of the board of directors, as well as officers of the St. Louis Union Trust Company. A description of the syndicate operations with respect to financing the construction of a number of lines and the sale of such properties to the Frisco, including the names of the officials of the latter company who were subscribers to and participated in the profits of the syndicate, follows:

A summary of the amounts subscribed by syndicate subscribers and advanced by trust companies in the construction of a number of properties, and the profits realized by syndicates and trust companies on the sale thereof to the Frisco, follows:

Name of railroad.	Amount paid in.	Profit.
Oklahoma City & Western	\$2,097,043.95	\$369,278.82
St. Louis, San Francisco & New Orleans	5,300,000.00	837,400.00
St. Louis & Gulf	2,700,000.00	1,385,696.52
St. Louis & Oklahoma City	1,000,000.00	556,150.00
St. Louis, Oklahoma & Southern	3,423,432.10	719,574.90
Arkansas Valley & Western	3,046,635.00	589,767.32
New Iberia & Northern	2,000,000.00	500,000.00
St. Louis, Brownsville & Mexico	3,981,000.00	3,011,928.95
Colorado Southern, New Orleans & Pacific	3,000,000.00	375,000.00
Total	\$26,548,111.05	\$8,444,796.51

The desire of the Frisco for an entrance into the city of Chicago resulted in the purchase, in 1902, of the common and preferred stock of the Chicago & Eastern Illinois by the issuance of Frisco stock trust certificates upon the basis of \$150 for the pre-

ferred stock and \$250 for the common stock of the Chicago & Eastern Illinois. In order to meet the fixed charges upon its stock trust certificates, it was essential that the Frisco should receive in dividends from the Chicago & Eastern Illinois 6 per cent. upon the preferred stock and 10 per cent. upon the common stock each year. On the preferred stock 6 per cent. was paid each year. The dividend on the common stock has been sufficient to meet the interest requirement on the stock trust certificates in but three years. The resultant net loss on the common stock amounted as of May 27, 1913, to \$1,710,388, which amount the Frisco paid in interest upon its common-stock trust certificates, held by the public in excess of the dividends received upon the Chicago & Eastern Illinois common stock.

DISCOUNT

The discount on bonds and notes other than short-term notes issued by the Frisco lines which it controls, including the Frisco issue of bonds on the New Orleans, Texas & Mexico, and the premiums paid on retirement of underlying issues, aggregated \$32,152,602.07. Premiums amounting to \$1,486,852.25 were received on a series of refunding bonds and notes, leaving the net amount so paid \$30,665,749.82. The payment of this enormous amount of discount in 12 years must be deemed to be due to one of two causes: (a) That the credit of the Frisco was very poor; or (b) that bankers obtained the securities at prices which may or may not have been as high as could have been obtained from those not directly interested in the financing of the Frisco.

The Rock Island secured control of the Frisco in 1903 through the purchase of the Frisco common stock, and retained such control until 1909, when it disposed of its holdings to B. F. Yoakum, Edwin Hawley, and others. During that period the credit of the Rock Island was never extended to the Frisco, though benefits doubtless accrued to the owning company through traffic relations and possibly favorable divisions of rates. During the six years of Rock Island control the Frisco issued more than \$71,000,000 in short term notes, all of which were liquidated within the same period except \$1,641,329.12. During the same period the net increase in the funded debt, including equipment trusts, was \$78,000,000.

The securities of the Frisco issue, and those of the Kansas City, Fort Scott & Memphis, a leased line absolutely controlled by the Frisco through stock ownership, brought prices ranging from 62½ to 98, the former price being secured on a sale of Kansas City, Fort Scott & Memphis refunding 4 per cent. bonds in 1908, and the latter price being obtained for an issue during September, 1912, of two-year 6 per cent. notes, amounting to \$2,600,000, secured by collateral having a face value of over \$8,000,000, and the pledge of the Frisco's entire interest in the south Texas lines.

Within the widest possible range of reasonable charges to the public, no transportation company, constructed and living upon borrowed capital, can long survive a situation in which it sells securities at 62½ cents on the dollar and pays interest on the par value thereof. At 4 per cent. the \$30,665,749.82 of net discounts and commissions carried by the Frisco represents an annual expenditure of \$1,226,630 for interest upon money which it never received. The accounts show that the securities were sold at prices higher than those above quoted, but commissions varying from 1 to 2½ per cent., paid to the bankers, aggregated more than \$3,000,000.

DIVIDENDS

During all these years, while its securities were sold under heavy discounts and while it was borrowing funds to meet its obligations, the Frisco consistently paid annual dividends of 4 per cent. upon its \$5,000,000 of first preferred stock, an annual charge of \$200,000. The last of such dividends was declared for the quarter ended March 31, 1913. Dividends on the second preferred stock were discontinued in 1906. Thus this company, whose securities were discounted as high as 37½ per cent., apparently attempted to maintain a prosperous appearance by disbursing dividends which were not in fact earned. It is claimed

that these dividends were paid in order to hold the confidence of the public and the bankers. In financing enterprises of this nature bankers would not be strongly influenced by the payment of such dividends. They would consider other elements affecting the financial condition of the company and having a bearing upon the ability of the company to properly earn the dividends paid. The public would not be so well able to protect itself.

EFFECT OF FRISCO FINANCIAL POLICY

The policy of the Frisco in the acquisition of new lines at prices greatly in excess of construction costs and the sale of its funded debt securities at extravagant rates of discount, including the payment of premiums on retired issues and commissions to banks and bankers on such issues, the investment in stocks of industrial companies on which no dividends have been paid, the assumption of heavy fixed charges for its Texas lines as well as for the Chicago & Eastern Illinois far greater than its returns therefrom, and payment of excessive charges upon the investment in and use of terminal and coal properties have resulted in the net revenue of the Frisco being absorbed by such charges in a sum which approximates between \$3,500,000 and \$4,000,000 per annum.

The following items are descriptive of those resulting in annual charges against the income of the Frisco and for which the Frisco received no apparent value or return. The charges are computed on the basis of actual amounts where ascertainable and by applying interest rates of 4 and 5 per cent. on other items.

	Fixed annual charge.	
	4 per cent.	5 per cent.
Profits on sale of new lines to the Frisco, \$8,444,796.51	\$337,792	\$422,240
Discounts, premiums and commissions, net, \$30,500,000	1,220,000	1,525,000
Investment in Kirby Lumber Co. stock, \$1,226,208...	49,048	61,310
Due from St. Louis, San Francisco & Texas Ry. for traffic balances, \$2,200,000	88,000	110,000
Interest on \$28,500,000 bonds New Orleans, Texas & Mexico R. R., less \$500,000 in Frisco treasury and \$3,000,000 covering profit on sale of Brownsville...	1,250,000	1,250,000
Interest on \$14,000,000 bonds New Orleans Terminal Co., Frisco proportion, net.....	180,000	180,000
Average annual loss on investment in Chicago & Eastern Illinois R. R.	170,000	170,000
Rentals paid Crawford Mining Co.....	27,000	27,000
	\$3,321,840	\$3,745,550

It will be observed that in applying the actual charges where ascertainable and 4 per cent. on discounts, etc., the result is an annual charge of \$3,321,840, while applying the same rule on a 5 per cent. basis \$3,745,550 is shown as the amount chargeable annually.

These figures of themselves are not strikingly significant, but when it is seen that they represent 31.09 per cent. and 35.06 per cent., respectively, of the total funded debt interest charge of the Frisco each year and that the Frisco receives no apparent benefit therefrom their significance is apparent.

In order to earn the revenue necessary to meet these charges annually, and assuming that the operation of the Frisco was conducted on an operating ratio of 70 per cent., it would require gross revenues amounting to \$11,072,800 in the first instance and \$12,485,170 in the second. The total gross earnings of the Frisco for the fiscal year ended June 30, 1913, approximated \$43,000,000 and the amounts quoted represent 25.69 per cent. and 29.04 per cent., respectively, of this sum.

PROGRESS OF ST. LOUIS & SAN FRANCISCO RECEIVERSHIP

The receivers originally appointed for the Frisco were B. L. Winchell, president of the Frisco, and Thomas H. West, chairman of the board of the St. Louis Union Trust Company. Mr. Winchell later resigned and W. C. Nixon and W. B. Biddle, vice-presidents of the Frisco, in charge, respectively, of operation and traffic, were appointed receivers on July 15, 1913, vice Mr. Winchell. In December, 1913, Mr. West was succeeded as receiver by James W. Lusk, and the property is now in the hands of Messrs. Lusk, Nixon and Biddle as receivers.

The results of operation of the property during the period of the receivership to November 30, 1913, compared favorably with that of the same period of the previous year. The increased earnings under the receivership amounted to \$412,773.26, resulting

in the largest earnings in the history of the property for any like period.

The available cash on hand on November 30, 1913, was \$1,470,249.21, the receipts and disbursements during the receivership being as follows:

Receipts.	
Received from treasurer St. Louis & San Francisco, May 28, 1913	\$603,849.96
Items accrued prior to appointment of receivers	3,191,618.98
Items accrued since appointment of receivers	26,001,955.25
Total receipts	\$29,797,424.19
Disbursements.	
Items accrued prior to appointment of receivers	\$6,900,157.97
Items accrued since appointment of receivers	21,427,017.01
Total disbursements	\$28,327,174.98

The amount of outstanding bonds in the hands of the public have increased during the same period \$574,000, occasioned by the sale of an equal amount of general lien 5 per cent. bonds which were disposed of by bankers holding such bonds as collateral for loans made prior to May 28, 1913. The liability of the company in the form of notes liquidated by the sale of this collateral was \$286,635.01.

Interest on funded debt has been paid at the interest dates with the exception of the following instances in which there has been default. The principal and interest on an issue of 2-year notes, also in default, is included.

Principal and interest on \$2,250,000 2-year notes due June 30. Interest on 2-year notes dated September 1, 1912, due September 1, 1914.

Interest on Frisco-Chicago & Eastern Illinois common stock trust certificates, due July 1, 1913.

Interest on Frisco-Chicago & Eastern Illinois preferred stock trust certificates, due July 1, 1913.

Interest on Frisco-New Orleans, Texas & Mexico division bonds, due September 1, 1913.

Interest on New Orleans Terminal Company's bonds, due July 1, 1913.

The payment of the principal of \$2,880,000, par value, Ozark & Cherokee Central bonds, due October 1, 1913, has been extended by agreement with the bondholders to October 1, 1914.

In but one instance has it been necessary for the receivers to borrow funds to liquidate indebtedness of the Frisco which they were permitted to pay. They borrowed \$400,000 from the St. Louis Union Trust Company on three notes due July 1, which were all paid prior to July 25.

On petition of the receivers an order of the court was entered October 27, 1913, authorizing an issue of \$10,000,000 of receivers' certificates, the proceeds thereof to be used in the payment of preferential claims, equipment trust notes, bonds and bond interest, and for additions and betterments. None of these certificates had been issued up to November 30, 1913, but the dates, amount and interest thereon are to be fixed by further orders of the court.

An order of the court was entered December 26, 1913, denying the petition of William W. Niles for leave to sue the former officers and directors of the Frisco for alleged violation of their trust in the sale by them in 1900 of the stock, bonds, and notes of the St. Louis, Brownsville & Mexico. The receivers were instructed to bring and prosecute such suit or suits, John D. Johnson and Loomis C. Johnson were appointed special counsel to the receivers, and James W. Lusk was invested with exclusive charge for the receivers of the conduct of such suit or suits.

Under instructions from the court the receivers have refrained from paying any bills for material purchased prior to May 28, or bills of other carrier companies for car repairs, claims, traffic balances, etc., which apply to the six months prior to the receivership. The receivers are endeavoring to have these orders of the court modified so that they may pay such bills as they are audited.

Considerable improvement work is being done by the receivers, more particularly rebuilding bridges, laying heavier rails, and

continuing work that was in progress prior to the receivership. A slight curtailment in the expenses of operation has been effected by discontinuing the salaries of the chairman of the board and the president, reducing the New York office force, and slightly reducing the salaries of several of the vice-presidents. Transportation costs have been reduced by discontinuing a number of passenger trains. A higher standard of maintenance appears to have been applied during the term of the receivership. Application is to be made to the court for the abrogation of a contract with the Peabody Coal Company for delivery of approximately 700 tons of fuel per day. The tie-treating contract with the American Creosoting Company has been suspended for two years by mutual consent of the parties thereto.

PROGRESS OF CHICAGO & EASTERN ILLINOIS RECEIVERSHIP

May 27, 1913, on petition of the Railway Steel-Spring Company, William J. Jackson and Edwin W. Winter were appointed receivers of the Chicago & Eastern Illinois. The amount due the petitioner, as stated in the bill, was \$57,673.42. The receivers qualified and took possession of the property on the day of their appointment, and are now operating the same.

Will H. Lyford, of Chicago, Ill., was appointed general counsel for the receivers.

The results from operation of the property for the months of June and July, 1913, compare favorably with those of the corresponding months of 1912.

	June, 1912.	June, 1913.	July, 1912.	July, 1913.
Operating revenues ..	\$1,206,518.25	\$1,345,482.04	\$1,301,928.28	\$1,367,571.97
Operating expenses ..	762,440.93	965,775.91	900,008.91	1,064,396.95
Taxes	28,500.00	43,466.67	37,000.00	45,000.00
Net	415,577.32	336,239.46	364,919.37	258,175.02

It will be noted that the gain in gross revenues is more than offset by the increases in operating expenses, due largely to maintenance expenditures necessitated by lack of proper maintenance in previous years. The receivers being under no obligations to pay dividends, it is probable that maintenance charges will continue to be large until the property is brought to a higher physical standard.

On June 3, 1913, the court authorized the receivers to pay fines and costs aggregating \$10,034.82, assessed against the Chicago & Eastern Illinois for violations of the act to regulate commerce.

On June 25, 1913, an order was entered giving leave to the Equitable Trust Company of New York to file an intervening petition. The Equitable Trust Company of New York is the trustee under two trust agreements dated October 1, 1902, and a supplemental agreement dated April 27, 1905, in respect to common stock trust certificates representing Chicago & Eastern Illinois common stock, entered into between the St. Louis & San Francisco and the Colonial Trust Company of New York. These trust agreements provided for the issuance by the Frisco of certain stock trust certificates in respect to common and preferred capital stock of the Chicago & Eastern Illinois.

On June 25, 1913, an order was entered authorizing the receivers to make repairs, additions, and betterments and purchases of additional locomotives, and to pay the cost thereof out of any funds coming from the operation of the property.

The receivers were also authorized to pay the interest maturing on or before January 1, 1914, upon the defendant's refunding and improvement bonds, bills payable, and rentals.

The receivers were also authorized to issue \$4,000,000 of receivers' certificates for payment of the following:

Interest maturing on or before Jan. 1, 1914, upon railroad bonds other than refunding and improvement bonds	\$1,474,735.00
Interest maturing on or before Jan. 1, on equipment obligations ..	170,872.50
Principal installments due on or before Jan. 1, 1914, on equipment obligations	850,000.00
Overdue vouchers and supply accounts (the unpaid vouchers on May 27, 1913, amounted to \$2,697,874.76)	1,504,392.50
Total	\$4,000,000.00

The Bankers Trust Company as trustee under the refunding and improvement mortgage opposed the issuing of the receivers' certificates upon the terms proposed.

The receivers' certificates are dated July 1, 1913, payable one year after date, with interest at the rate of 6 per cent. per annum payable semi-annually. The entire issue was taken by the Equitable Trust Company at various dates during July, 1913, at par less 1½ per cent. commission. The amount realized by the receivers was \$3,940,000. From this fund disbursements were made to September 1, 1913, as follows:

Interest maturing on or before Jan. 1, 1914, upon railroad bonds other than refunding and improvement bonds.....	\$435,050.00
Interest maturing on or before Jan. 1, 1914, on equipment obligations	138,382.50
Principal installments due on or before Jan. 1, 1914, on equipment obligations	658,000.00
Overdue vouchers and supply accounts	1,504,392.50
Aggregate payments	\$2,735,825.00

On June 30, 1913, the Equitable Trust Company loaned the receivers \$725,000 on a demand note dated June 28, 1913, bearing interest at 6 per cent. The proceeds were deposited in the Mechanics & Metals National Bank of New York on June 30, 1913. This was a temporary loan secured in order to meet interest obligations due on July 1, 1913, and the note was paid by the receivers on July 1, 1913, from the proceeds of receivers' certificates.

REPORTS OF TWO DERAILMENTS

The reports of the chief inspector of safety appliances of the Interstate Commerce Commission on two recent derailments have just been issued. The following information is abstracted from these reports:

On October 29, 1913, a passenger train on the St. Louis & San Francisco was derailed near Chelsea, Okla., while running about 40 miles per hour, killing the engineman and injuring the fireman. This train, known as the "Meteor," was en route from Kansas City, Mo., to Oklahoma City, and consisted of one mail car, one baggage car, one combination car, one chair car and three Pullman sleeping cars. The mail, combination and chair cars were of steel construction, the baggage car had a steel underframe and the sleeping cars were of wood.

The forward tender trucks were the first wheels derailed, and ran along the roadway until a passing track switch was reached, where the frog and one switch rail were broken. The engine and tender continued along the main line for 200 ft. before turning over, while the cars were diverted to the passing track.

This derailment occurred on a single track line near the top of a short 0.5 per cent. ascending grade on tangent. The track was laid with 85-lb. rails with 19 to 21 oak or creosoted ties per rail and 8 in. of chatt ballast. About 100 ft. east of the point of derailment there was a soft spot about 20 ft. in length which always caused considerable trouble, especially during wet weather.

An examination of the track from a point a half mile east of the point of derailment to a point one mile west showed defective track conditions. At one rail joint at the approach to a bridge, three spikes were so loose as to enable them to be withdrawn by hand. At another point two rail joints were bolted only at one end, presumably because the necessary bolt holes had not been drilled in the end of the adjoining rail. At another place 30 spikes were removed by hand from ties under one rail and 10 of the ties were decayed. In another place 78 out of 134 ties were defective; 16 out of 19 ties under one rail being in this condition and 15 being in succession. At this same point there were 142 loose or missing spikes and 126 additional spikes which could be removed by hand out of a total of 536.

The division superintendent and roadmaster stated that they believed the track conditions on this portion of the line to be entirely safe for the allowable speed of 50 miles per hour, and the roadmaster stated that he had encountered no difficulty in securing track material to properly maintain the track. While the cause of this accident was not definitely determined, the general inspector of safety appliances reported that, in view of the conditions described above, it is his belief that the track was not safe for the operation of trains at the speed permitted.

On November 13, 1913, a passenger train on the Central of

Georgia was derailed about four miles east of Clayton, Ala., killing nine passengers and injuring 389 passengers and one employee. This accident occurred on a single track line with one regular passenger and one freight train each way daily. The train was derailed on a long tangent on an embankment about 26 ft. high. The grade was descending from Clayton to the point of the accident, the maximum rate being 2.4 per cent., and that at the point of derailment being 1.47 per cent. While the train ordinarily consisted of a locomotive, combination car and one coach, three additional coaches were carried on this date to accommodate excursionists attending a fair. The three rear cars only were derailed and were badly broken up. They were wooden cars built in 1883 and 1889.

The derailment was caused by a broken rail. The initial fracture was a square break 6 ft. from the leaving end of the rail. After the accident the receiving end of the rail was found intact for a length of 24 ft., while a second break occurred 2 ft. from the leaving end of the original rail. This rail was rolled in 1883 and weighed 56 lb. to the yard. It had first been laid in track in 1883, and had been relaid at the point of the accident in 1895. An average of 16 untreated pine and cypress ties per rail were used with no ballast.

After the derailment the track was carefully inspected for about 1,200 ft. each way, and notes taken of the condition of the ties, only ties which were so badly decayed as to be absolutely unserviceable and unable to support the rails or provide secure holding power for the spikes being designated as bad ties. West of the point of derailment, 81 bad ties were found in one stretch of 630 ft., as many as eight being found under one rail. In this section of track six broken rails were found, one of which was in three pieces, the shortest of which was but 2 ft. long. In the first mile of track west of the derailment, 16 such broken rails were found. The method of repairing these rails in track was to bolt a strap through one broken end, leaving the other end of the rail without bolts or to hold two straps together by a bolt passing between the adjacent ends of the rails. In the first 1,200 ft. east of the point of derailment 94 bad ties were found. At three joints the spikes were pulled out by hand.

The section foreman on this section had a force of two men for a nine-mile section, although he had authority to hire four men when he could get them. He had been in charge of this section for only 16 days, but had found 14 broken rails in this time, only one of which had been removed from the track. The track supervisor stated that the track where the wreck occurred was reasonably safe and not particularly in need of protection. He considered it safe to permit four to six rotten ties under a rail, providing they were distributed, and said that just west of the point of derailment the rotten ties averaged about five to the rail.

The minimum running time of this train between stations shows the highest speed permitted to be about 33 miles per hour. There was much conflict in testimony between the passengers and employees regarding the speed of the train at the time of the accident, but it was probably considerably in excess of this figure.

In his report, the chief inspector of safety appliances concludes that "while the direct cause of this accident was a broken rail, bad track conditions and speed inconsistent with safety were material contributing causes both of the derailment itself and of its results. When rails of this character are used on rotten ties without ballast and with an inadequate force of men to patrol the track and perform the necessary work, as this investigation showed was in existence on this branch, accidents of this character may be expected to occur. The method of indicating the maximum speed permitted is not such as surely to enforce the desired result, as there is nothing to prevent an engineman from running 60 miles or more per hour over portions of the road, providing only that he does not exceed the minimum allowed between stations. The speed limit on this branch should be definitely stated in miles per hour, and it should be placed low enough to insure comparative safety in moving trains over track in this condition."

New Great Northern Station at Minneapolis, Minn.

Through Passenger Terminal, Including Several Unique Features, Used by Five Roads With Heavy Traffic

The Great Northern put in service a new passenger terminal in Minneapolis, Minn., on January 22, which embodies a number of novel features of design and is unusually complete in its equipment for a station of its size. The new station adjoins and replaces the old "union" station which was built about 1885. The new terminal will be used also by the same roads that entered the old station in addition to the Great Northern, namely; the Northern Pacific, the Chicago, Burlington & Quincy; the Chicago Great Western, and the Chicago, St. Paul, Minneapolis & Omaha. Actual work on the new building was begun in July, 1912.

GENERAL ARRANGEMENT

The old terminal occupied a narrow strip of land along the Mississippi river with a two-level station building facing High street just south of Hennepin avenue. The six through station tracks on the level of the lower floor of the building extended

with an upper level in the station building at street grade. All of the Great Northern and most of the Northern Pacific trains are operated through Minneapolis, and since all the trains of the other three lines which terminate there enter and leave the south end of the station and the coach yards are all located north of the passenger station, no reverse train movements are necessary with the through type of station.

The average number of trains per day in the old station was 115. The average number of passengers for a year was 5,622 per day with a maximum of about 11,000 during the summer when the suburban travel is greatest. The average number of pieces of baggage handled per day was 1,661; the express business amounted to 160 trucks per day and the mail averaged 8,160 pouches and sacks per day. This traffic required more track room than was provided in the old layout and the new plan was accordingly designed to include 12 station tracks, which with the platforms occupy practically the entire width of right of



Front Elevation of the New Great Northern Station from Hennepin Avenue Viaduct

under the viaduct approach to the bridge which carries Hennepin avenue over the river. As the old station was centrally located with respect to both the business and residential portions of the city, and was adjacent to Hennepin avenue, an important thoroughfare with a through street railway line crossing the river there was little to be gained by a change in the site.

The problem of designing a new terminal on the same or an adjacent site, without interruption to traffic, however, was a difficult one. The old right of way was confined between the Mississippi river and the tracks of the Minneapolis Eastern, the width at the crossing of Hennepin avenue being not more than 300 ft., most of which was occupied by the old station and train shed. The Minneapolis Eastern serves important flour mills along the river, and it was therefore practically impossible to secure any of the property occupied by that company. There was, of course, no possibility of extending the right of way on the river side.

The nature of the traffic and the topography made it advisable to continue the same type of terminal—a through track layout

way under Hennepin avenue. As it was very desirable to have the new station building face this street, it was located over the tracks, occupying the full width of the property. To increase the length of station tracks, the angle of crossing under the Hennepin avenue viaduct was changed, which involved the rebuilding of that structure. In connection with this work the structure was widened to the full street width in order to give free access to the entire front of the new building.

The new track layout is designed to connect at the north end by easy curves with the proposed Boom Island line which the Northern Pacific expects to build almost directly north to a connection with the double track line used jointly by the Northern Pacific for its main line and the Great Northern for its Duluth line. This proposed connection will greatly improve the alinement of both roads.

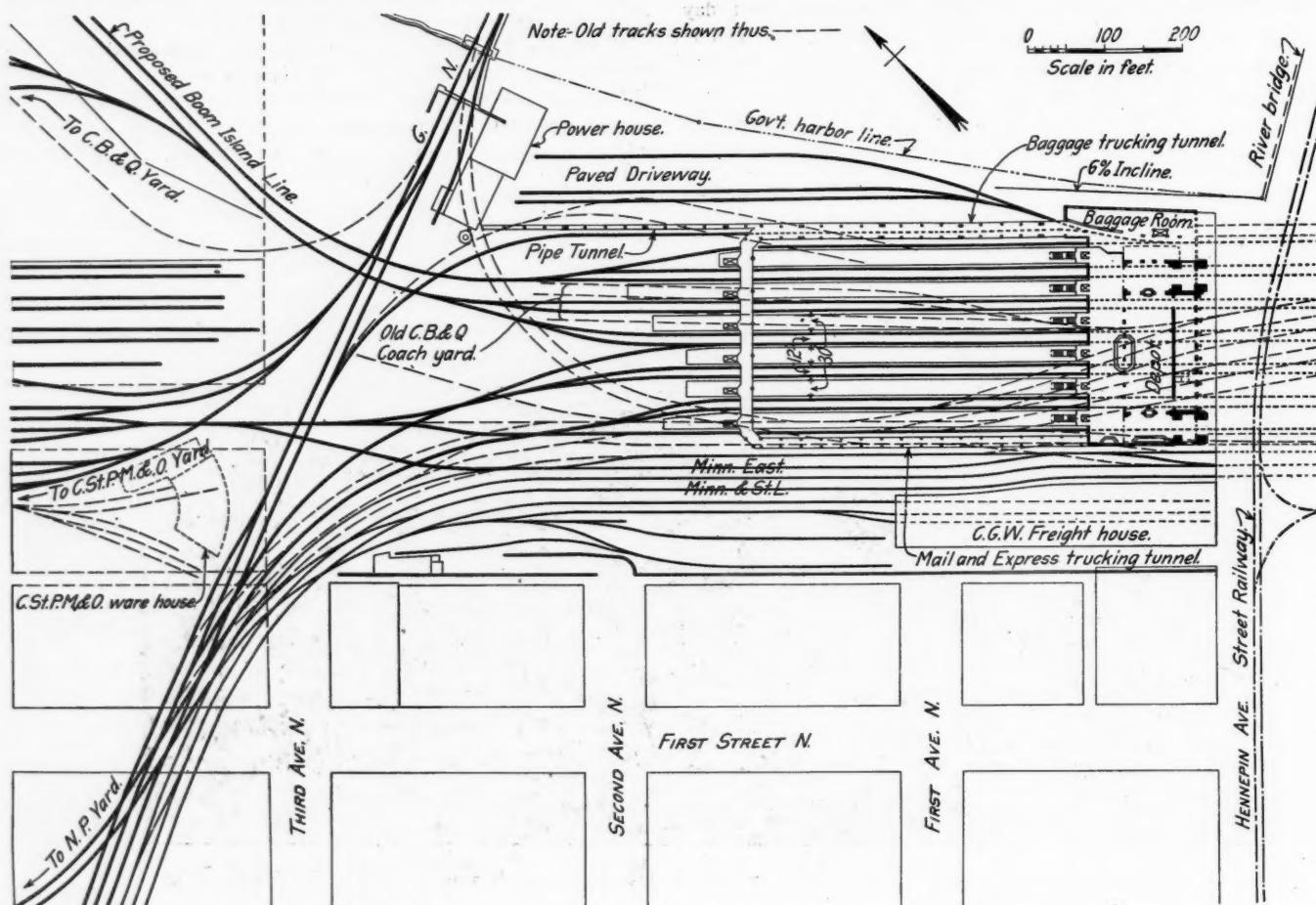
By locating the new building north of Hennepin avenue it was possible to complete a large part of the construction without interruption to the traffic in the old station. The first stage of the work which has just been finished included every-

thing north of the south line of Hennepin avenue. Traffic is now being handled in this portion of the new terminal, while the old station is being removed to allow the train sheds and the remainder of the layout south of Hennepin avenue to be completed.

CONSTRUCTION OF STATION BUILDING

The station building is a rectangular structure 155 ft. by 300 ft., and three stories high above the street level. The face of the building is set back 12 ft. from the property line, leaving a clear width of street over the sidewalk of 150 ft. It is thought that this street width will allow ample space for a cab stand without interfering with the street car service or vehicular traffic approaching the station. The building is of steel frame and brick walls faced with Kettle river sandstone. It is supported on caisson foundations carried down to rock or good

in size at the ends of the main waiting room and connecting directly with the concourse. This arrangement provides two short and unobstructed passageways from the street to the train shed stairways, enabling all passengers to avoid the waiting room unless they want to enter it. The inner vestibules are connected with the main waiting room by three large arched openings occupying the full width of the waiting room and six double doors allow easy access between the waiting room and the concourse. The ticket office is located between the waiting room and the concourse with 11 windows facing the waiting room and 10 on the concourse. The smoking room and women's room adjoin the main waiting room on the south, occupying the front of the building. The baggage room is located at the east end of the station with the checking counter adjoining the inner vestibule at that end. The information booth occupies the central arch between the vestibule and waiting room



Track Layout Showing Portions of Old and New Terminal North of the South Line of Hennepin Avenue. All New Work in This Section Has Been Completed

gravel from 23 ft. to 40 ft. below the track level. The structure is fireproof throughout with tile partitions and steel window frames in the main building.

There are two main entrances from Hennepin avenue through arches in the massive piers at the corners of the building. When the south half of the train shed is built, two stairways will be provided from the south side of the street directly to two station platforms so that trains on the four tracks served by these platforms can be reached by patrons of the Great Northern Minnetonka suburban service without going through the station.

To meet the local requirements, an unusually large percentage of the main floor area has been devoted to vestibules, passageways and the concourse. The two main entrances open through three double doors into 18 ft. by 37 ft. vestibules, which in turn connect with inner vestibules or passageways 37 ft. by 64 ft.

at the east end and telephone booths are located in the same relative position at the opposite end of the room. The news stand extends along the full length of the west side of the west vestibule and adjoining it at the west end of the concourse are the telegraph booth and additional telephones. At the east end of the concourse is the parcel check room and station master's office. The six double stairways and passenger elevators connecting the concourse with the platforms are located along the north side of the concourse.

The waiting room is 62 ft. by 150 ft., with a beamed ceiling and skylights in the panels, art marble floor, Tennessee marble wainscot and plastered walls. A seating capacity of about 250 is provided. The concourse is 44 ft. by 265 ft. with a cement floor and the same type of wainscot, walls and ceiling as the waiting room. All plastered surfaces are given a dead finish with "Keystona" wall finish, and all woodwork is of oak. Trains

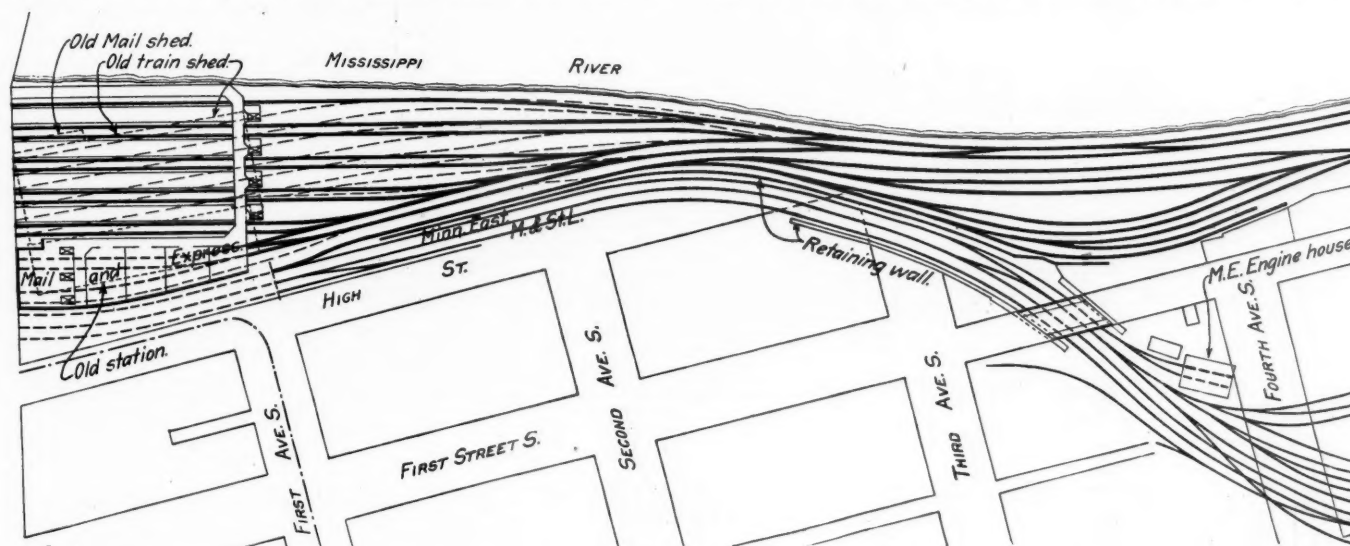
will be announced by Hutchinson indicators which are provided for each track.

The smoking room is 27 ft. by 52 ft., with a De Smet composition tile floor, marble wainscot and plastered walls and ceiling. The women's room is 27 ft. by 36 ft. finished in the same manner as the smoking room, with the exception that Vermont gray marble is used for the wainscoting. Free and pay toilets are provided for both men and women, a barber shop is located on a mezzanine floor over the men's toilet room, and a retiring room adjoins the women's room.

The upper floors cover only the front and ends of the building, the central portion being occupied by the roof of the main waiting room. The only public room above the main floor is the dining room, which is located on the second floor at the east end with windows overlooking the main waiting room. This dining room is 40 ft. by 62 ft., which it is thought, will be large enough to meet the demand in view of the nature of the traffic which will be handled. The room is fitted with a lunch counter and tables. A kitchen with all necessary equipment adjoins the dining room. The remaining space on the two upper floors is occupied by space for unclaimed baggage, ventilating equipment, etc., and the local offices of the Great Northern. An

gage, mail and express matter to the station platforms near both ends without crossing the tracks at grade or trucking along the platforms, elevated trucking galleries were designed to provide a continuous passageway around the entire train shed layout. The cross galleries at both ends of the train shed just above the shed roof will be connected with the platforms by elevators. In order to carry the longitudinal galleries under the Hennepin avenue viaduct it was necessary to build a section of each on a 6 per cent. grade, with elevators to connect the lower ends of these inclined sections with the adjacent galleries on the upper level.

When the second stage of the work is completed baggage for northbound trains will be trucked on the level from the baggage room to the north cross gallery, and to reach southbound trains it will be lowered on an elevator in the baggage room to the gallery running under the street and rising to the grade of the south cross gallery. Mail and express matter, on the other side, will be lowered in the building, trucked under the street and up an inclined gallery to reach northbound trains and will move on the level to the gallery at the south end of the shed. These trucking galleries have steel frames with concrete floors and plastered walls and ceilings on stiffened wire cloth. The mini-



Track Layout South of the South Line of Hennepin Avenue, Showing the Old Station and Train Shed and the South Half of the New Train Shed and Mail and Express Building Which Remains to be Built

elevator and stairways at each end of the building serve the upper floors.

TRAIN SHED AND BAGGAGE, MAIL AND EXPRESS FACILITIES

In view of the fact that about one-third of the total length of the station tracks in the complete development will be covered by the station building and the Hennepin avenue viaduct, it was felt to be imperative that as much sunlight and air as possible be secured in the sheds at both ends of the station tracks in order to properly ventilate the covered space. For this reason the "butterfly" type of shed was adopted. It is not expected that any difficulty will be found in removing the smoke and gases from this space by natural ventilation as the prevailing winds are parallel to the river and therefore to the tracks. Complete plans have been made, however, for a system of forced ventilation under the building that can be installed later if necessary. The sheds are steel frames supported by structural steel columns on concrete pedestals, the roof being of wood covered by a tar and gravel coating.

The method of handling baggage, mail and express matter to trains is unique. The baggage room occupies the east end of the station and the mail and express rooms will be located in a separate building south of the Hennepin avenue viaduct over the westerly tracks, the construction of which is included in the second stage of the work. In order to deliver the bag-

gage, mail and express matter to the station platforms near both ends without crossing the tracks at grade or trucking along the platforms, elevated trucking galleries were designed to provide a continuous passageway around the entire train shed layout.

The baggage room is 170 ft. long and from 27 ft. to 58 ft. wide. It is equipped with three Strait scales with Kron attachments for weighing baggage. The mail room will be comparatively small, as only local mail is handled here, and four express companies will have quarters in the new building. The doors of the baggage room and of the mail and express building will be fitted with Kinnear rolling steel fire doors. Carload lots of express or baggage will be handled on three team tracks along the east side of the train shed. This provision will be particularly convenient in the handling of the milk traffic, which is very heavy. These team tracks are reached from the viaduct by a 300-ft. reinforced concrete driveway on a 6 per cent. grade along the east end of the station building. This driveway will be used during the construction of the south half of the terminal for trucking mail and express matter from temporary quarters down to the track level.

POWER HOUSE

It was impossible to locate the power plant under the station building, and as the adjacent space along the river was required for team tracks, it was necessary to place it about 800 ft. north of the station. The structure is built of hydraulic brick on con-

crete foundations with steel roof trusses supporting concrete slabs. The stack is of brick with an internal diameter of 78 in. and a total height of 215 ft.

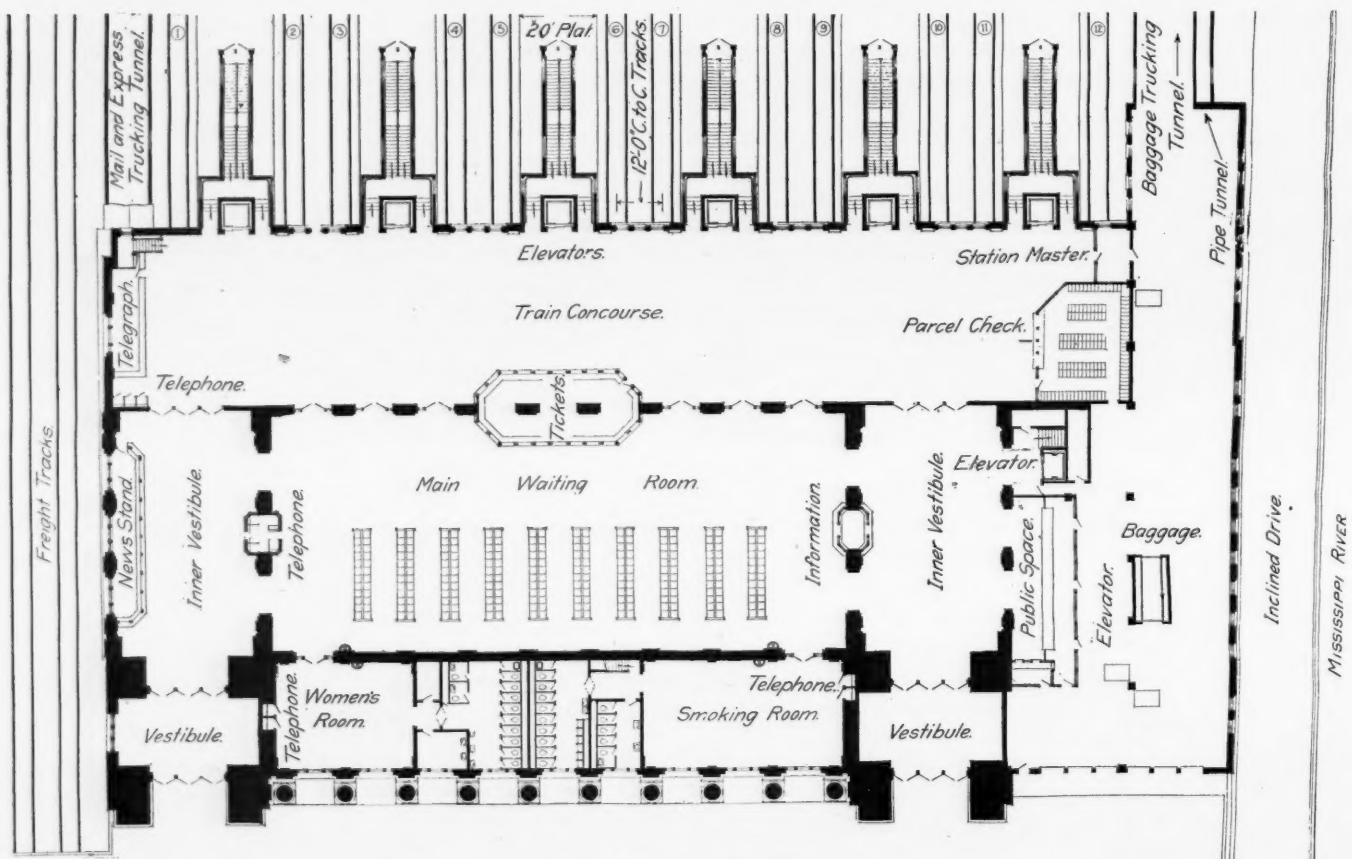
The boiler installation consists of three Edgemoor boilers with a normal rating of 308 h. p. each, provision being made for installing a fourth of similar capacity. The boilers are equipped with Murphy automatic smokeless furnaces, Foster superheaters and soot blowers. The coal supply is brought in on a spur track and dumped into a track hopper from which it is discharged into a pan conveyor which delivers it to the crusher. If it does not require crushing, it can be dumped directly onto the bucket conveyor which normally receives it from the crusher and elevates it to the top of the building where it is dumped at any desired point into the continuous concrete storage hopper extending over the boilers. This hopper has a capacity of 250 tons, which will supply the plant for about a week, at the maximum demand of 600 h. p. From the overhead bunkers the coal is fed by gravity to the automatic furnaces. The coal handling plant has a ca-

non-condensing and all exhaust steam is used for heating the station.

The pump room is located in the basement of the building below the engine room. It contains all of the usual auxiliary apparatus including boiler pumps, vacuum pumps, feed water heater, Bowser oiling system and waste washing machine, etc. In connection with the feed water heater a Lea "V" notch recorder is provided for measuring the feed water accurately and in pursuance of this policy of obtaining exact information as to the service of the plant a General Electric indicating steam flow meter is attached to each boiler steam outlet.

MECHANICAL EQUIPMENT IN STATION

The transmission lines from the power house to the station building are carried in a pipe tunnel elevated on steel columns and combined with the baggage trucking tunnel for a portion of its length. The exhaust steam for heating is transmitted in two 10-in. mains and a 4-in. high pressure steam line supplies the



Street Floor Plan of the New Station

capacity of 25 tons per hour. The ashes are carried from the pits under the boilers in the same bucket conveyor that handles the coal, up to the top of the building where they are discharged on a pan conveyor which delivers them to a large hopper above the track from which the coal is dumped, thus allowing the same cars which bring in coal to take out ashes if desired. This overhead hopper has a capacity for storing three or four weeks' accumulation of ashes.

All power required in the terminal is generated by three direct connected generating sets located in the engine room at the east end of the power house. Two simple Buckeye engines are direct connected to 150-k. w., 225-volt d. c. Sprague generators, and one cross-compound Buckeye engine is direct connected to a similar 250-k. w. machine. This plant is designed for a maximum load under the present arrangement of 250 k. w. All of the engines are arranged to be operated condensing and one Worthington condensing apparatus taking water from the river is provided. During the winter, however, the engines are run

kitchen and the small machine room at the east end of the station.

As it was necessary to carry a live steam line from the power house to the station building in order to supply the kitchen, it was found advisable to locate some steam driven machinery in a small machine room under the baggage room at each end of the station. This allows the vacuum pumps of the Holly system of gravity return to receive the condensation in all steam pipes throughout the station and pump it back to the power house through a 4½ in. pipe carried in the elevated pipe tunnel. If it had been necessary to locate these pumps in the power house a tunnel would have been required through the solid rock below the surface.

The service water is drawn from the city mains and pumped to a storage tank on the roof by two motor driven centrifugal pumps. The drinking water supply is also drawn from the city mains but before distribution it is filtered through a sand filter, then through International disc filters and is then cooled to 38

deg. in a 10-ton per day Kroschell ice machine. Sanitary bub- 225 volts d. c., and is distributed from a switchboard in the
bling fountains and faucets are provided throughout the build- machine room. A balancer set is provided for the three-wire



Interior of Main Waiting Room, Looking West

ing. The exhaust steam from the vacuum pumps is used to heat the water used in the building.

The electric power is transmitted from the power house at

distribution system. This room also includes the main exhaust fan and a four-sweeper vacuum cleaning plant.

Indirect heating is used in the main waiting room and the



Interior of Concourse Showing Ticket Office, Parcel Check Room and Entrances to Stairs and Elevators.

dining room and direct radiation is provided in all other portions of the building. The warm air is introduced in the waiting room through the walls and taken out through registers at the ends of each seat. Enough radiation has been installed in the open space between the roof of the waiting room and the skylights to keep the air at the top of the room from becoming too cold. The total amount of equivalent direct radiation in the station building is 46,300 sq. ft. The Johnson system of temperature regulation is installed throughout the building both for

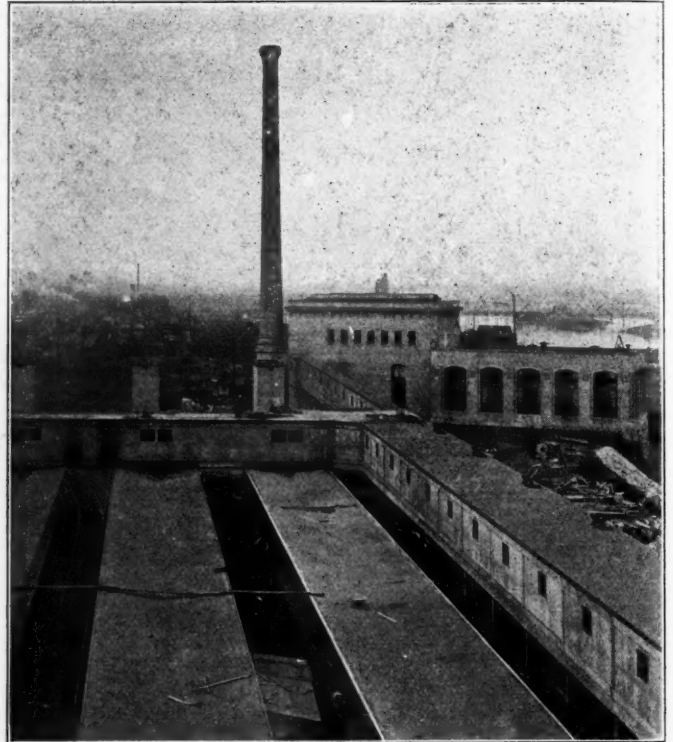
building and 39,800 cu. ft. per min. is exhausted, this apparent discrepancy being due to the fact that separate high pressure exhausts are provided for the toilet room and kitchen, into which no air is blown.



The New Station from the River Showing Reinforced Concrete Driveway Leading Down to the Team Track

direct radiation and for the control of the fan system of ventilation.

The fans for ventilating the building are located on the third floor at the east end. The air that is drawn in is first blown over tempering coils, then through washers and then through the reheating coils. The washing serves to cool the air in summer. A total of 33,500 cu. ft. of air per min. is blown into the



Looking North From the Top of the New Station Showing a Corner of the Train Shed, the Baggage Trucking Gallery, Pipe Gallery and Power House



Engine Room of the Power House Showing the Three Engine Units, Switchboard and Opening into the Pump Room Below

Tungsten lamps and Alba shades are used throughout the building with the semi-indirect system in the smoking room and women's room. All steel porcelain reflectors are provided in the baggage room and train sheds. All of the lights have remote control, the switches for the main building being located just off the smoking room. The waiting room and concourse require 80,700 watts for lighting. The complete terminal contains seven passenger elevators, six serving the train platforms and one the upper floors of the station, a freight elevator located in the baggage room serving the floors above and below, six baggage, mail and express elevators serving the platforms at the north end of the train shed and six similar elevators to be located at the south end of the shed. All of these elevators are operated by 220-volt d. c. motors.

A conductors' signal system is installed to connect the concourse gates with the station platforms; and it is expected that this system will be extended later to include a connection with the interlocking plants. Telephones are also installed on the station platforms and at the concourse gates. A pneumatic



Reconstruction of Hennepin Viaduct, Showing the Old Train Shed on the Right and the New Building on the Left

clock system is controlled from a master clock in the train dispatcher's office to which are connected a number of clocks located in all the public rooms.

GENERAL

The cost of the complete terminal will be about \$1,900,000 exclusive of property. The station, train shed and new viaduct cost about \$1,300,000, the power house \$250,000, and the mail and express building is estimated at \$250,000.

The design of the entire terminal was handled under the supervision of A. H. Hogeland, formerly chief engineer and now consulting engineer. The construction was started under his direction, and has been completed under the direction of R. Budd, chief engineer. The design was made by Charles S. Frost, architect, Chicago, and the construction was supervised by D. W. Stearn, superintendent for Mr. Frost. The design of the complete mechanical installation was made by Neiler, Rich & Company, mechanical engineers, Chicago. The contract for the station building, train shed and power house was let to the Charles W. Gindele Co., Chicago. The changes to the Hennepin avenue viaduct were designed by the bridge department of the Great Northern and handled under contract by the Pittsburgh Construction Company, Pittsburgh, Pa.

STATE OWNERSHIP OF RAILWAYS IN ARGENTINA.—The province of Buenos Aires in Argentina has closed negotiations for the purchase of the La Plata Railway for \$500,000.

THE INDUSTRIAL RAILWAYS CASE

In re Allowances to Short Lines of Railroads Serving Industries.

Opinion by Commissioner Harlan:

This is a proceeding to determine the legality of the allowances paid by public carriers, east of the Mississippi river, to industries on their rails that own and operate plant railways in connection with their industrial establishments. The allowances are made to the industries or to their subsidiary railways in the form of (a) divisions out of the rate, (b) per diem reclaims, (c) remission of demurrage, and (d) furnace allowances. Involved with that question is the related and equally important question of the legality of the services performed by the line carriers, without charge in addition to the rate, in spotting cars in and about industrial plants that have no locomotives of their own or that have their own locomotives but nevertheless look to the line carriers to switch their traffic to and from any point in the plant in accordance with the demands of the industry.

The allowances so paid and the free services so performed involve in the aggregate an immense expenditure for which the carriers must necessarily be reimbursed through the rates exacted on the traffic of the general public; at the same time, it must be noted, the allowances and free services so paid and performed by the carriers relieve the particular industries of a large burden of expense which the industries themselves would otherwise have to meet as a part of their manufacturing cost. This operates as a discrimination against the smaller competitors of the favored concerns because, in the nature of things, the benefit of such allowances and free services can be enjoyed only by the larger industrial establishments with plant railways.

The importance of the case can not easily be overstated. It is important to the commercial and industrial enterprises now enjoying these special advantages at the hands of the carriers, because of the large and direct financial aid and benefit to the industries resulting from the allowances and free services. It is of no less concern to other large manufacturing and industrial companies which, while similarly situated, are not at the moment so favored by the carriers, but are putting themselves in form to claim these concessions from them in the near future. It is equally important to the great mass of shippers, who neither receive the allowances or free services nor are in a position to claim them, but who, in the open markets, must nevertheless meet the competition of industries so favored and are put by these practices at a commercial disadvantage that is obvious and sometimes very acute. Finally, the matter is of far-reaching consequence to the public, for upon the general public rests the burden of contributing sufficient revenues to the carriers to enable them to meet their expenditures, including those incurred on behalf of the industries so favored, and in addition to earn an adequate return upon the property so devoted to the service of the public.

DEPLETION OF RAILROAD REVENUES

The exact amount of the loss to the carriers resulting from such allowances and free services does not appear from the record, but the evidence establishes the fact that the depletion of their revenues through these practices is very great. The amount paid in allowances and reclaims is large; and the services rendered free by the line carriers to a relatively few favored industries would, if charged for on a reasonable basis, increase the revenues of the carriers by many millions annually. The practical immunity from demurrage charges, enjoyed by these industries in consequence of these practices, is also a very substantial item.

Allowances.—During the year ending June 30, 1912, the Pennsylvania paid \$1,019,910.41 in divisions out of the rate to only 10 such industrial railways connected with steel plants; the New York Central's western lines paid to 12 such industrial railways an aggregate of \$660,057.93; the Baltimore & Ohio paid to 13 such industrial railways the sum of \$530,317.06. Five of these industrial railways received from the several lines the additional

amount of \$1,059,274 in per diem reclaims. Just how much demurrage these arrangements enabled these industries to avoid is not shown, but the loss in car service revenues to the carriers must have been very material.

Free Services.—During the year ending June 30, 1911, the railroads performed for a single steel industry, the Republic Iron & Steel Company at Youngstown, Ohio, free spotting services for 75,134 cars at a cost to the railroads of \$104,329.62, or \$1.40 per car. That industry, as a facility in its industrial operations, maintains a system of standard-gage tracks aggregating between 35 and 40 miles, all located in and around the plants. With these the rails of several railroads connect; and instead of the railroads' transportation service ending where the plant tracks begin, the railroads without additional compensation deliver and spot the inbound loaded cars at such points within the plant inclosure as the steel company requests; and in the same manner they also spot the empty cars for loading.

THE JUSTIFICATION

The record amply demonstrates that these allowances and free services were never taken into consideration in fixing the rate but in effect are concessions from the rate. They have grown up as the direct result of competition among the carriers for the traffic, or, to express the thought more accurately, they are an example of the special concessions and rebates in service that shippers with a large traffic are able to wring from the carriers in consideration of being permitted to handle the traffic or share with other lines in its carriage.

Nevertheless, the allowances actually paid to these industries, or their subsidiary railways, are here sought to be justified by those receiving them on the theory that the industries in handling their own traffic into and out of the plant with their own power, and, as their own convenience may require, are performing a part of the carrier's proper service of transportation for which the industries may be compensated by the line carrier out of the rate. The free services are sought to be justified on the theory that the transportation service of the line carrier properly extends into a plant and to and from each separate building and point within it that it reached by the plant rails.

FUNDAMENTAL PROBLEMS INVOLVED

The problems arising out of these practices are so presented on the record as to require a disposition of them upon fundamental grounds. In other words, the privileges and advantages of this character, now enjoyed by a relatively small number of more or less extensive industrial establishments, must either be held to be an unlawful concession to them by the carriers or, if lawful, the principles upon which they may be justified must be ascertained and clearly defined so that like privileges and advantages may be claimed, as of right, by all industrial establishments served by these carriers, whether they be large or small. The allowances and free services referred to very materially increase the operating expenses, are a heavy drain upon the revenues of the carriers, and as heretofore stated must be provided for out of their general revenues. It follows, therefore, upon a large view of the record, that the real question involved is whether the particular industries, which these plant railways serve and by which or in the interest of which they are owned, are themselves to bear the burden of operating them, or whether the allowances and free services which the line carriers now pay to and perform for these industries, a class of shippers that necessarily must always be relatively small in number, are to remain a burden the cost of which may be spread by the carriers through their rates over the traffic of the entire public. If the allowances and free services may on any ground be justified and found to be lawful, they will on like grounds be claimed by and must in the near future be extended to all industries similarly situated.

RELATION OF THESE PRACTICES TO RATE ADVANCES

Indeed, the very carriers that are augmenting their expense accounts and dissipating their revenues in this manner, to the

extent of many millions of dollars a year and for the benefit of a comparatively few shippers, are now complaining that their present earnings are insufficient and, on that ground, have asked our permission to make a substantial increase in their general rate schedules. In that sense the proposed advance in rates has a certain very definite and immediate relation to this proceeding. In this general connection it may safely be assumed that no substantial part of the well informed and reflecting public would deny to the owners of the railroads of the country a reasonable return on their investments; nevertheless, before they may fairly ask the general public to share further in carrying their burdens, it is manifest that the railroads must themselves properly conserve their sources of revenue by making every service rendered by them contribute reasonably to their earnings. This having been done, the commission upon an adequate showing of the need of additional revenues will not shrink from the responsibility of sanctioning such measures, including even a general advance in rates, as may be required to bring reasonable prosperity to railroads, so far as this may be accomplished under rates and charges that are reasonably just alike to shippers and to the carriers. Aside from the right of the owners of the property so devoted to the use of the public to receive from the public a reasonable return on their investments, it is of profound importance to the public in its own interest to accord fair and equal treatment to the owners of railroads, for upon no other basis may we continue to look to private capital for the further development and extension of our railroad facilities. The general public interest is therefore advanced in a very direct way by reasonable success of railroad investments under rate schedules that reasonably respect the rights of shippers. But if further burdens through an increased scale of rates may justly be imposed on the general public, all must agree that unlawful concessions, rebates and preferences in the interest of a small proportion of the shipping public ought to be eliminated from the practices of carriers. It is therefore appropriate, as it is also our duty on general grounds, to examine carefully into the legality of the allowances, free services, per diem, and demurrage concessions, of the character disclosed on the record before us, by means of which the revenues of the carriers are so heavily taxed and their net earnings so largely impaired; and we now take up the consideration of that question with a full appreciation of its far-reaching importance.

SCOPE OF THE INQUIRY

The order instituting the proceeding embraces all industries with plant railways east of the Mississippi river. The investigation, however, has been confined for the present to iron and steel industries in that territory. But before stating the facts relating to the various plants described of record, it is proper to say that the whole matter was voluntarily brought to the attention of the commission by certain of these industries and the line carriers that serve them.

Perhaps the most striking example of the influence of large industrial operations in shaping the policy of the line carriers may be found in the case of the large plant of the United States Steel Corporation at Gary.

RELOCATION OF TRUNK LINE TRACKS AT INDUSTRIES

The Chicago, Lake Shore & Eastern was originally a plant railway of the Illinois Steel Company at South Chicago, but both the plant and the railway later became the property of the steel corporation. Subsequently, when the steel corporation commenced the building of a new plant at Gary, designed to be one of the largest in the world, the tracks of this industrial railway were extended to connect the plant at South Chicago with the new plant at Gary, and all the yard tracks and sidings located in and around the various buildings and departments at Gary were constructed in the name of the Chicago, Lake Shore & Eastern. As a site for the new plant the steel company had purchased a large area of land near Lake Michigan and adjoining the Illinois-Indiana state line; but the entire lake frontage

at this point was then occupied by the four-track, stone-ballasted main line of the Lake Shore & Michigan Southern, and the double-track, stone-ballasted main line of the Baltimore & Ohio extended directly through the center of what is now the Gary plant. Prior to the commencement of the work of building the plant the officers of the steel corporation held a conference with the executives of those lines, at which it was agreed that if the two carriers would convey the eight miles of the lake front to the steel corporation the latter would provide them with other rights of way and build new tracks of the same type and turn them over to the two lines fully completed and without cost to them. The result of these negotiations was that all the existing tracks of both lines were moved away and the steel corporation took possession of the valuable frontage on the lake, eight miles long, putting in the necessary docks for handling its ore and other materials. The expense of these changes approximated \$7,000,000; it was borne by the steel corporation by capitalizing the amount in the cost of the Chicago, Lake Shore & Eastern.

The arrangement not only provided an extensive area of land for the plant of the steel corporation, but it excluded the line carriers from access to the plant and gave full control of the rail facilities to and within the plant to the plant railway. The tracks of the plant railway within the plant aggregate about 114 miles, and its operations became so enormous that it was thought to be inadvisable, as we understand the matter, to continue to maintain the allowances to the plant railway as an industrial railroad, and thereupon all its tracks were leased to the Elgin, Joliet & Eastern, which is also entirely owned by the steel corporation. Thereafter, in order to give a semblance of legality to the liberal divisions accorded by the line carriers on traffic to and from the plant, the numerous mills, warehouses, and other points of loading and unloading within the plant were treated as local stations of the Elgin, Joliet & Eastern.

PUBLIC SERVICES OF INDUSTRIAL RAILWAYS.

The legality of allowances to plant railways of this character was considered from a somewhat different point of view in *General Electric Company v. N. Y. C. & H. R. R. Co.*, 14 I. C. C., 237. There the complainant, conducting a great industry with an extensive system of plant rails and locomotives of its own, asked for an order requiring the defendant carriers to make it an allowance out of the rate for operating its plant railway in the movement of its own traffic to and from various parts of its plant. The commission held, however, that the service beyond the interchange tracks was not a carrier's service, or a part of the transportation undertaken by the carriers, but was a shipper's service—a service apart from transportation that was performed by the shipper for its own benefit on tracks and with facilities within the plant inclosure that were laid and used for the complainant's own convenience and as necessary facilities in the conduct of its manufacturing operations. It also held that a carrier, when serving industrial plants of that character, performs its full duty under its contract of transportation when it delivers or accepts cars at some reasonably convenient interchange point, such as the storage tracks provided for the purpose by the complainant within the plant inclosure. It further held that the line carriers are under no duty to extend their transportation obligations with the extension of great industrial plants, like that of the complainant, and could not lawfully be called upon, as a part of the service of transportation, to make deliveries through a network of interior switching tracks, constructed as plant facilities to meet the necessities of the industry; and that their obligation as common carriers involves only a delivery and acceptance of carload shipments at a reasonably convenient point of interchange between their main line and the plant tracks of the industry.

PER DIEM RECLAIMS

In order to have a clear idea of the practice of carriers in the matter of per diem charges and of the important privileges resulting from it to these iron and steel industries, it is necessary to understand the modified agreement, which is the basis upon

which the line carriers settle with switching roads for the detention of their equipment. The ordinary switching or terminal line, when a member of the per diem agreement, is under an expense of 45 cents a day for each car of a trunk line held upon its rails. Usually such lines have no equipment of their own upon which they in turn may earn revenues from the trunk lines. In order, therefore, that the per diem charge may not unduly deplete the revenues of the switching lines, the latter under the modified agreement are entitled to make a reclaim against their immediate trunk-line connections for a stipulated number of days, the period, as contemplated and intended under the practice, being based upon the actual experience of the respective switching lines in the necessary detention of cars on their rails. The periods agreed upon with the industrial lines involved range from three and one-half days in the case of one plant railway to a maximum of five and one-half days, and appear in some cases to be substantially in excess of their reasonable necessities. During the period so designated for a given industrial line it is required to pay, to the trunk line owning the car, a per diem charge for the number of days the car is actually on its rails; but, under its right to make reclaim for the whole period upon its immediate trunk-line connection, the industrial line makes a profit of 45 cents per day for each day saved out of the designated reclaim period by the prompt return of the car. The industrial lines that have been given the benefit of the modified agreement are not only practically relieved of the payment of per diem charges but, through these arrangements, many of them receive a substantial addition to their revenues, which accrues to the benefit of the controlling industry.

In the iron and steel industry this charge or per diem reclaim in many instances has become the source of large revenues to the plant railways and to the industries that own them. Of the 30 industrial railroads, parties to this proceeding, 10 are members of the per diem agreement. It is shown of record that for the year ending June 30, 1911, the aggregate amount of per diem reclaims received by only five of these roads amounted to \$1,059,273.99. These matters, however, have more recently been the subject of conferences among the line carriers and with these industries; and an understanding has been reached as the result of which per diem reclaims, after January 1, 1914, will no longer be a source of revenue to the industries. They are, however, still to enjoy immunity from demurrage.

SWITCHING AND SPOTTING

In addition to the cash revenues lost by the line carriers through reclaims and the complete elimination of demurrage as a transportation charge against such industries, there is the gratuitous switching service performed by the line carriers in many large plants which have installed extensive spur and switch tracks in and about their mills and other buildings for necessary industrial purposes, and yet look to the line carriers to extend their rates to every door and other point within the plant, regardless of its size or the intricacy of the plant tracks or the cost of the service; and to do their inbound and outbound switching without charge, and even to do their interworks switching, in some cases without profit. It is impossible to estimate the aggregate cost to the line carriers of this free service in the territory east of the Mississippi river, but the amount is very large and its reasonable value to the shippers for whom it is performed must amount to many millions of dollars a year.

THE PRACTICE IN ENGLAND AND ELSEWHERE

It may be useful at this point to refer to the practice of English railways with respect to the switching service preceding or following the transportation service required under the rate. Under the English law the term "conveyance" is defined as the conveyance by regular trains and such service incidental thereto as can be performed by the locomotive and crew of the train. The "rate" covers all service incidental to the conveyance of freight, including the picking up and delivery at any railway company's terminal or public station, or at any side track at which delivery can be made directly from the train without unreasonable delay.

If a switching service is necessary between a private siding and the carrier's terminal at the originating point or destination, such service is not incidental to conveyance, but is classed as an extra service. This extra service, for which a railway may charge in addition to the rate for conveyance, being clearly defined by law or regulation, it naturally follows that no allowance or other form of rate reduction may legally be made to the shipper for performing any extra service for itself with its own facilities. In other words, there can be no reduction of a conveyance rate in compensation for a service which the railway company is under no obligation to perform. The service of the line carrier is confined to its own rails and delivery is made, as at common law, just clear of its right of way. Any service beyond that point is performed by the industry itself or at its expense. This, it is understood, is also the practice of the state railroads of Germany. While it might not be wise in this country to contemplate a separation of the line rate from the terminal charges, the record in this case makes it clear that we may to advantage adopt some of the wiser and more equitable practices elsewhere. It is conceded that many discriminations and other inequalities grow out of these relations between the line carriers and certain industries, which to a large extent could be eliminated by the observance on the part of the line carriers of the distinctions that have been drawn in such cases between the carrier's service and the shipper's service. In any event, a rate that is reasonable for the team-track and siding service is clearly less reasonable when it includes the much more costly service over tracks leading to a multitude of loading and unloading points within an industrial plant. Surely the same rate cannot stand as a proper rate for such a service and at the same time stand as a reasonable rate for the team-track and siding service. Either the plant rate is too low or the team-track and siding rate is too high and is burdened, along with the general rates of the public, with the cost of the plant service.

The commission finds with respect to those roads which were not conceded to be "real railroads," that all the service by the line carriers beyond a reasonably convenient point of interchange between the rails of the carrier and the rails of the industry, either within or without the plant, is a shipper's service, and not a service of transportation. The commission also concludes that the delivery of a car by a line carrier upon the exchange track, is a delivery to the industry, and that the elimination of demurrage, under the present practices, as a transportation charge against the industry, is unlawful.

The remaining half of the report is devoted to a discussion of the six incorporated industrial railways described by counsel as "regular railroads." The finding in each case is practically the same as that given above.

FURNACE ALLOWANCES

The last of the four different forms mentioned in the opening paragraph of this report in which the line carriers make contributions to iron and steel industries is through the so-called furnace allowances. At the time of the hearing these allowances were \$2.25 a car on ore, \$1.75 on coke, and \$1.60 on limestone. They are referred to repeatedly on the record as rate adjustments, and are paid in order to equalize conditions at the various blast furnaces so that the assembling cost of materials that go into a ton of pig iron would be the same at all iron and steel industries. If, however, it is the real purpose of the line carriers through such allowances to put the industries on a parity so far as the cost of manufacture is concerned, it necessarily follows that they have undertaken in this manner to regulate competition as between these industries. This is not a duty devolving upon common carriers, nor does the commission understand it to be a lawful procedure. Moreover, if that is the intent and purpose of a furnace allowance it is not really carried out, for there is a striking diversity of practice with respect to the allowances made to the various iron and steel industries or to their plant railways. Regardless of the form and the extent of these allowances the fact is clearly established, that they grew out of the competition of the carriers

for the traffic, and whatever their original purpose their present result in effect is a contribution by the line carriers that relieves the industry of what is essentially a part of the cost of manufacture. The whole practice results in undue preferences and unlawful discriminations, and the allowances themselves we find to be unlawful on general grounds.

The report closes with the following:

GENERAL OBSERVATIONS

A full understanding of these matters, resulting from a careful examination of the record, impresses us with the inherent unlawfulness of this relation between large industries and the line carriers, built up upon the fiction that their plant railroads are servants of the shipping public, and therefore perform a service of transportation for the proprietary industries for which they may be compensated by the line carriers out of the rates. The practice has grown step by step until, by reason of the immense drain upon the revenues of the line carriers, it has now become a burden of substantial proportions upon the general shipping public. The primary purpose of the act to regulate commerce, as the courts have often said, was to strike down undue preference and favoritism, and a large part of our labors is devoted to complaints of that nature. The cost to the line carriers of these contributions by them in money and services, per diem claims, and demurrage exemptions, to the few favored shippers shown on this record does not appear. It has been estimated at not less than \$15,000,000 a year, and this we regard as conservative.

As we have just indicated, these practices were not suddenly devised in their present form but are more or less the result of a process of development. The traffic of these industries is so enormous as to make it a facile instrument for forcing concessions out of the line carriers; and when one line has yielded to these influences, the others serving the same industry must necessarily pay the same price or lose their share of the tonnage offered for carriage by the industry. In that manner the practice has spread from industry to industry; and the varying forms by which it is surrounded and under which it is conducted at the different plants are simply a cloak and device to give it the color of legality. It was admitted of record by counsel for many of the more important of these iron and steel companies that the trunk lines would be entirely within their legal rights if they abandoned the allowances now being paid to some industries and abandoned the services now being performed without charge for other industries. What we decide upon the testimony adduced is that these practices are unlawful in themselves because they are rebates, in fact and in effect, and also give undue and unreasonable preferences and advantages to the industries so favored and work undue and unreasonable prejudice and disadvantage to shippers in the same business who do not receive any such allowances or rebates and who do not receive the benefit of any such services. And we hold further upon the record that the form in which these plant facilities are organized and operated is an unlawful device adopted by the industries for the purpose of securing rebates from the published rates and rebates in service and other unreasonable advantages forbidden by law.

As we have heretofore stated, these matters were voluntarily brought to our attention by a joint committee of the trunk lines and the steel corporation, and were submitted to our consideration on the understanding that the conclusions reached would be accepted both by the carriers and by the industries. Under these circumstances it seems to be unnecessary at this time to enter an order; we assume that the trunk lines and the industries will at once adjust their practices in conformity herewith. We are warranted also in assuming that there will be no effort, through trackage rights and similar devices, to continue in another form the relations which we here declare to be unlawful. It may be well to add that all questions that may arise or be suggested under section 15 of the act are reserved for consideration upon the request of the parties in interest.

Commission's Investigation of Private Car Lines

Interstate Commerce Body Holds Hearings at Chicago on Relations of Car Lines, Shippers and Railways

The first public hearing in the Interstate Commerce Commission's investigation of private car lines, under the order of the commission issued June 15, 1912, was begun at Chicago on January 21, before Commissioner McChord.

George P. Boyle, counsel for the commission, in a preliminary statement, said that previous to the issuance of the order the commission had practically no data respecting private cars, not even a list of private car owners. Under supplemental orders dated October 8, 1912, and September 13, 1913, a series of interrogatories had been addressed to the railways and to the private car lines, the replies to which, together with the results of special investigation by the commission, had been compiled in the form of nine exhibits, which were filed as a part of the proceeding.

Mr. Boyle said the commission desires to examine the entire subject of the relations between the railways, private car lines and shippers, for the purpose of ascertaining whether there is any violation of the law, and that the inquiry would include, the basis of compensation paid by railways to private car owners; whether or not the railways should own all equipment; the character of equipment furnished; whether any class of equipment is given preferred service, and whether shippers are properly taken care of with the divided responsibility; refrigeration charges and service, whether furnished by railways, pri-

operating results of any particular car owner or operator. Depreciation has been computed uniformly at the rate of 5 per cent. per annum on the amount shown as investment in cars. Certain car owners and operators reported no depreciation charged, while others reported more than 5 per cent. It should not be understood that the rate of 5 per cent. for depreciation is regarded by the commission as the proper rate to be charged under all circumstances. No opinion is expressed as to what should be the rate for depreciation on private cars, but the question is left open for determination in this proceeding, if possible. In certain cases the separation of operating expenses as between soliciting and handling freight (chargeable against "commission" earnings), refrigeration service, heating service, etc., has been made on an arbitrary basis by car lines or by the commission. Such figures, as indeed other figures contained in the exhibit, are subject to criticism and correction, and no claim is made that they are all absolutely correct. As a matter of fact, the accuracy of certain figures reported to the commission is doubted, and further inquiry will be made concerning them.

The commission's exhibit 4 is a statement of the actual performance of private cars of different kinds as operated by different classes of car owners or operators, showing the average cost per car, commodities for which they are used, average earnings from all sources per car per year, average number of miles

TABLE I.—TOTAL NUMBER OF FREIGHT CARS OF PRIVATE OWNERSHIP AND OF RAILROAD OWNERSHIP IN TRANSPORTATION SERVICE ON JANUARY 1, 1913.

Number of owners	Cars of private ownership		Kind of cars						
	Classification of owners	Refrigerator	Tank	Stock	Coal and coke	Heater	Live poultry	Other kinds	Total
37	A—Independents—Not owned or controlled by railroads or shippers	6,597	13,429	19,808	199	510	891	1,594	43,028
6	B—Incorporated car lines owned or controlled by railroads	16,477	167	.....	.....	.....	.....	.....	16,644
22	C—Incorporated car lines owned or controlled by shippers	26,195	1,333	1,563	4,337	.....	.....	1,059	34,487
576	D—Industrial concerns whose cars are used in connection with and incidental to their commercial activities	5,313	15,110	341	19,604	.....	.....	2,652	43,020
641	Total of private car owners and of cars owned....	54,582	30,039	21,712	24,140	510	891	5,305	137,179
	Total of railroad-owned cars.....	48,926	9,150	71,299	801,042	648	114	1,370,532	2,301,711
	Grand total	103,508	39,189	93,011	825,182	1,158	1,005	1,375,837	2,438,890

NOTE.—This exhibit does not include cars owned by certain industrial concerns and used exclusively as a plant facility and not entering upon the rails of common carriers in connection with transportation movements; cars owned by contractors and builders and used chiefly in connection with construction work and only occasionally for transporting commercial freight; cars in the hands of manufacturers and dealers; and certain other cars which are capable of being used in transportation service but which are not regularly so used.

vate car owners or shippers, and details of cost and profit or loss.

The commission's exhibit 1, published herewith as Table 1, is a statement of the number and classification of freight cars of private and of railroad ownership on January 1, 1913. This shows that the railways and incorporated car lines owned or controlled by railways, own a majority of the refrigerator, stock, coal and coke, heater, and other kinds of cars, but that the majority of the tank cars and all of the live poultry cars are privately owned.

Table 2, commission's exhibit 2, is a statement of the freight equipment owned and in service of the railways on January 1, 1913.

Table 3, commission's exhibit 3, is a statement showing the financial results of operation of private cars by representative owners for a period of one year. The figures used in this exhibit are not in all cases those reported to the commission, nor do they in every instance cover the same period. The exhibit as a whole is intended to be used for purposes of comparison, and to show approximately the results of operation of private cars, stated on as nearly a uniform basis as possible from the data at hand. It is not to be taken literally as showing the

run and average mileage earnings per car per year and per day, earnings per car per 100 miles run, and average cost of repairs per car per 100 miles run (not including repairs made by railways for which no bill is rendered under M. C. B. rules). The total earnings of private cars include such items as mileage, per diem in lieu of mileage, rental of cars, commissions for soliciting and handling freight shipments, refrigeration and heating service, and other miscellaneous earnings. For a large number of the companies this statement only shows the performance in detail for 25 cars consecutively numbered and the mileage per day is based on 365 days per year.

The Armour Car Lines, for example, reported 15,206 cars, of which 25 representative refrigerator cars for fruit and vegetable service cost an average of \$1,243, and earned from all sources an average of \$149.26 per car per year, of which \$148.66 represented mileage payments. These cars made an average of 48 miles per day and earned \$.41 per day in mileage. Twenty-five cars used for meats and packing house products were reported as costing \$717, and earning \$233.67 per year each, making 75 miles a day and earning \$.64 a day.

The Union Tank Line reported on 25 tank cars costing \$1,087, which earned \$211.55 each per year, of which only \$43.53 was

represented by mileage at the rate of 16 miles or \$.12 per day. Some of the variations are said to be due to differences in methods of accounting by the different companies. Four of the principal incorporated car lines owned or controlled by railways

with 7,678 cars at \$1,013, reported total earnings as \$306.70 and mileage earnings \$.45 per day.

The commission's exhibit 5 is a statement showing the percentage of loaded and empty mileage made by various classes of

TABLE II.—FREIGHT EQUIPMENT (NOT INCLUDING WORK EQUIPMENT OR CABOOSE CARS) OWNED AND IN SERVICE OF RAILROAD COMPANIES AS OF JANUARY 1, 1913.

Kind of cars	Number of cars owned by railroads	Number of cars leased to other companies, individuals and concerns (not including railroads)	Number of cars leased from other companies, individuals and concerns (not including railroads)	Number of cars in service of railroads
Box cars—				
Automobile	42,914	.....	243	43,157
Furniture	24,269	.....	.....	24,269
Hay	51	.....	.....	51
Other box cars	979,762	92	388	980,058
Total box cars	1,046,996	92	631	1,047,535
Flat cars	155,002	332	172	154,842
Stock cars	71,299	.....	9,162	80,461
Log cars	8,639	256	81	8,464
Coke cars (including coke racks)	35,424	.....	218	35,642
Coal cars	765,618	686	4,497	769,429
Ore cars	46,334	319	49	46,064
Tank cars	9,150	134	191	9,207
Refrigerator cars	48,926	10,976*	1,732	39,682
Heater cars	648	.....	426	1,074
Live-poultry cars	114	.....	.....	114
Rack cars (excluding coke racks)	1,023	2	54	1,075
Manure cars	20	.....	.....	20
All other freight cars	112,518	52	454	112,920
Total all cars	2,301,711	12,849	17,667	2,306,529

*Of these 10,976 refrigerator cars, 10,975 are leased to private car lines owned or controlled by railroad companies.

gave reports based on all of their cars (refrigerator cars used for fruits and vegetables).

The American Refrigerator Transit, with 3,243 cars, reported the cost as \$1,000, the earnings per year as \$271.51 and the mileage earnings as \$.36 a day. The Central Fruit Despatch reported 3,646 cars at \$717, earning \$174.96 per year, and the mileage earnings as \$.434 a day. The Pacific Fruit Express with 9,982 cars at \$1,541, reported total earnings as \$547.42 and mileage earnings as \$.56 a day. The Santa Fe Refrigerator Despatch,

private cars over 127 representative railroads during the year ending June 30, 1912. This exhibit is summarized as follows:

	Total mileage	Percentage loaded mileage
Refrigerator cars	1,078,178.100	65.4
Tank	215,129.685	51.1
Poultry	11,789.843	50
Stock	150,092.874	52.1
Coal and coke	207,899.452	50.3
Other cars	15,823.527	59.2

TABLE III.—STATEMENT SHOWING THE INVESTMENT IN AND THE RESULTS OF OPERATION OF PRIVATE (FREIGHT)

Names of individuals, companies, and corporations operating cars	Kind of cars	Number of cars operated		Investment			Earnings	
		Owned	Leased	Cars	Other property	Mileage	Rental	Commissions
CLASS A CAR OWNERS AND OPERATORS.—Individuals, companies, and corporations operating cars not owned or controlled by railroads or shippers (independents).								
Arms Palace Horse Car Co.....	Palace stock	441	None	\$754,655.00	\$33,060.37	\$33,104.64	\$123,814.83	None
Doud Stock Car Co.....	Stock	1,558	None	545,300.00	149,249.03	60,034.40	77,187.66	None
German-American Car Co.....	Tank	1,020	52	1,100,700.00	Unknown	78,669.60	229,127.91	None
Live Poultry Transportation Co.....	Live poultry	691	None	1,068,227.14	63,053.25	90,540.70	229,549.76	None
Mather Horse & Stock Car Co.....	Various	10,601	None	8,063,875.00	101,386.00	127,211.09	865,991.68	None
Street's Western Stable Car Line.....	Stock	7,226	None	4,134,236.44	337,105.25	332,690.13	202,306.08	None
Union Tank Line Co.....	Tank	11,881	None	12,918,480.00	61,486.65	797,868.30	2,320,806.81	None
CLASS B CAR OWNERS AND OPERATORS.—Incorporated car lines operating cars owned or controlled by railroad companies.								
American Refrigerator Transit Co.....	Refrigerator	2,784	459	3,171,722.33	93,405.88	427,903.36	4,048.15	\$296,841.11
Central Fruit Despatch.....	Refrigerator	3,148	498	2,264,824.61	None	575,895.25	633.70	None
Frisco Refrigerator Line.....	Refrigerator	None	2,500	3,015,860.00	None	279,825.01	None	None
Pacific Fruit Express Co.....	Refrigerator	9,982	None	15,379,369.46	1,965,842.99	2,178,191.03	None	None
Santa Fe Refrigerator Despatch Co.....	Refrigerator	None	8,087	7,783,257.77	None	1,267,724.83	2,516.00	None
CLASS C CAR OWNERS AND OPERATORS.—Incorporated car lines operating cars owned or controlled by shippers and used chiefly for transporting freight in which controlling companies are interested.								
Armour Car Lines.....	Refrigerator and other	15,206	200	11,878,007.00	(*)	2,293,282.26	171,339.03	None
Cold Blast Transportation Co.....	Refrigerator and other	1,596	None	1,582,830.87	65,535.11	340,272.85	18,099.80	None
St. Louis Refrigerator Car Co.....	Refrigerator	1,154	None	801,170.00	79,804.83	248,463.10	10,078.15	None
Swift Live Stock Transportation Co.....	Stock	207	328	102,601.51	None	25,423.87	None	None
Swift Refrigerator Transportation Co.....	Refrigerator and other	7,621	None	8,559,316.61	None	1,349,194.28	47,563.11	None
CLASS D CAR OWNERS AND OPERATORS.—Individuals, companies, and corporations operating cars used chiefly for transporting freight in which owners of cars are interested.								
American Cotton Oil Co.....	Tank	733	None	637,919.61	None	68,357.88	7,205.46	None
Cudahy Packing Co.....	Refrigerator and other	1,518	100	1,716,489.73	370,000.00	423,098.06	None	None
Jamison Coal & Coke Co.....	Coal	1,500	None	1,540,000.00	None	125,049.41	None	None
Morris & Co.....	Refrigerator and other	2,411	None	2,308,520.58	152,466.00	476,593.11	1,031.00	None
Texas Co.....	Tank and other	1,148	225	1,305,290.67	None	79,236.19	201.00	None
United Coal Co.....	Coal	1,010	None	962,632.00	2,000.00	73,665.58	None	None

* Earnings and expenses in connection with heater service. Amount of expense account heater service estimated by the Commission.

* Per diem in lieu of mileage.

* Certain cars acquired during the year and in service only part of the year.

* New cars. Repairs relatively low.

The commission's exhibit 6 is a statement showing the percentage of loaded and empty mileage of refrigerator and stock cars operated by or in the interest of packing houses. The percentage of loaded refrigerator cars ranges from 49.91 for the Cold Blast Transportation Company to 55.80 for the Armour Car Lines, and of tank cars from 50.02 for the Swift Live Stock Transportation Company to 52.30 for the Chicago Stock Express. This statement does not show the total mileage made by all refrigerator and stock cars operated, but only the mileage of certain cars for which loaded and empty mileage was separately reported. In certain cases also the figures as to percentage of loaded and empty mileage are estimates.

The commission's exhibit 7 is a statement showing the mileage (loaded and empty) of private refrigerator cars owned or controlled by railways as compared with the mileage of like cars owned or controlled by shippers, over certain representative eastern and western railways during the year ending June 30, 1912. A summary of this statement is shown in Table 4. This indicates that the percentage of loaded mileage is much greater for the lines owned or controlled by railroads than for the lines controlled by shippers, 71 per cent. as against 51.6 per cent. on the eastern roads and 79.3 per cent. against 57 per cent. on the western roads. The total mileage is much greater for the shippers' car lines.

The commission's exhibit 8, is a comparison of the mileage (loaded and empty) of private refrigerator cars owned or controlled by railways over certain railways having an interest in such cars, with the mileage of refrigerator cars owned by certain shippers over the same lines, during the year ending June 30, 1912. The figures given for the American Refrigerator Transit Company, operating over the Missouri Pacific System lines, the Frisco Refrigerator Line over the Frisco System, the Merchants' Despatch Transportation Company over the New York Central Lines, the Pacific Fruit Express over the Southern Pacific, and the Santa Fe Refrigerator Despatch over the Santa Fe lines, were compared with eight shippers' lines. On the Mis-

souri Pacific, the Southern Pacific and the Santa Fe both the total mileage and the loaded mileage was greater for the railway owned or controlled line than for all of the eight shippers' lines together. On the Frisco the shippers' lines had the greater mileage, both loaded and total, and on the New York Central the Merchants' Despatch Transportation Company operated a greater loaded mileage, but a less total mileage than the shippers' lines. In every case the percentage of loaded mileage was greater for the car line owned or controlled by the railway than for the eight shippers' lines over the same roads.

The commission's exhibit 9 is a statement of the average loading of refrigerator cars by packers over several roads during specific months.

TESTIMONY

The first witness was W. L. Barnes, superintendent of transportation of the Chicago, Burlington & Quincy, who was questioned at length regarding the handling of special equipment. Refrigerator cars, he said, show a larger percentage of empty mileage than box cars. The Burlington cars are interchanged without restriction and are used to some extent by all of the packers at the Missouri river. Some merchandise is loaded in refrigerator cars when there is no demand for them for perishable freight, but there is a list of commodities that are not permitted to be loaded in such cars. Many complaints are received from packers on account of delay to their equipment, and the witness agreed to file a statement of all such complaints for two years. The road does not hold itself out to furnish tank cars for commercial service, most of its cars of this kind being used in company service, although there are usually some available for commercial use.

N. D. Ballantine, assistant to second vice-president, testified for the Chicago, Rock Island & Pacific. The Rock Island owns 2,072 refrigerator cars and occasionally leases others from the Milwaukee Refrigerator Transit Company at a rental ranging from \$18 to \$30 a month. The percentage of loaded refrigerator cars on this road is about 75, or 5 per cent. better than for

CARS BY REPRESENTATIVE OWNERS AND OPERATORS OF SUCH CARS, FOR A PERIOD OF 12 MONTHS.

for one year			Expenses for one year									
Refrigeration	Other earnings	Total earnings	Repairs	Depreciation at 5 per cent. of cost of equipment	Soliciting and handling freight	Refrigeration	Other expenses	Total expenses	Profit	Loss	6 per cent. on investment	"Other expenses" per car
None	\$760.22	\$157,679.69	\$40,576.98	\$37,732.75	None	None	\$40,048.62	\$118,358.35	\$39,321.34	.....	\$47,262.92	\$90.81
None	4,156.36	141,378.42	74,080.75	27,265.00	None	None	21,327.52	122,673.27	18,705.15	.....	41,672.94	13.69
None	None	307,797.51	39,318.85	55,035.00	None	None	64,154.76	158,508.61	149,288.90	.....	66,042.00	5.98
None	None	320,090.46	79,650.58	41,657.93	None	None	52,151.61	173,460.12	146,630.34	.....	61,400.00	75.47
None	None	993,202.77	440,415.42	403,193.75	None	None	51,710.73	895,319.90	97,882.87	.....	489,915.66	4.88
None	4,521.37	539,517.58	338,455.49	206,711.82	None	None	80,835.97	626,003.28	.....	\$86,485.70	268,280.50	11.20
None	8,332.18	3,127,007.29	669,587.50	645,924.00	None	None	373,044.76	1,688,556.26	1,438,451.03	.....	778,798.00	31.40
\$148,740.53	2,972.11	880,505.33	279,413.89	158,586.12	\$136,927.36	\$184,922.67	41,342.39	801,192.42	79,312.91	.....	195,907.69	12.75
61,381.16	None	637,910.11	107,352.47	113,241.23	None	133,759.85	20,173.00	374,526.55	263,383.56	.....	135,889.48	5.53
248,255.09	None	528,080.10	410,233.75	150,793.00	None	162,935.22	27,809.15	351,771.12	176,308.98	.....	180,951.60	11.12
3,283,855.87	2,340.15	5,464,387.05	464,660.12	768,968.47	None	2,603,702.69	99,764.45	3,937,095.73	1,527,291.32	.....	1,040,712.75	9.99
1,082,540.43	2,105.91	2,354,887.17	595,051.46	389,162.88	None	798,221.26	62,647.15	1,845,082.75	509,804.42	.....	466,995.47	8.16
(^a)	7 200,000.00	(^a)	1,063,143.50	593,900.35	None	(^a)	581,078.26	(^a)	(^a)	(^a)	(^a)	37.72
None	2,074.25	360,446.90	134,462.47	79,141.54	None	None	80,255.14	293,859.15	66,587.75	.....	98,901.96	50.29
None	2,145.64	260,686.89	125,582.63	40,658.50	None	None	18,213.61	183,854.74	76,832.15	.....	52,858.48	15.78
None	36,820.53	62,244.40	25,993.09	5,130.07	None	None	6,030.11	37,153.27	25,091.13	.....	6,156.09	11.27
46,658.89	None	1,443,416.28	811,251.80	427,965.83	None	21,089.22	88,390.99	1,348,697.84	94,718.44	.....	513,559.00	11.60
None	152.16	75,715.50	55,088.91	31,895.98	None	None	25,820.75	112,805.64	.....	37,090.14	38,275.18	35.23
None	None	423,098.06	217,092.66	85,824.49	None	None	50,843.33	353,760.48	69,337.58	.....	125,189.38	31.42
None	None	125,049.41	42,562.70	77,000.00	None	None	2,500.00	122,062.70	2,986.71	.....	92,400.00	16.66
None	2,476.14	480,100.25	197,255.60	115,426.03	None	None	51,214.00	363,895.63	116,204.62	.....	147,659.19	21.24
None	None	79,437.19	36,835.06	65,264.53	None	None	33,986.63	136,086.22	.....	56,649.03	78,317.44	24.75
None	None	73,665.58	29,493.10	48,131.60	None	None	654.14	78,278.84	.....	4,613.26	57,877.92	.65

^a Cost of leased cars.

^b Not reported. Data necessary to show complete results of operation requested but not furnished.

^c Per diem in lieu of mileage.

^d Rental paid chiefly by controlling industrial concern.

other cars because of an advantageous traffic situation. He submitted a list published by the American Railway Perishable Freight Association of commodities not suitable for loading in refrigerator cars. Occasional complaints are received from the packers as to delay in handling their equipment, and these cars are given an expedited service, but no more so than stock or other special equipment owned by the road, on account of the requirements of the traffic. No effort is made to supply tank cars for commercial service. He was not prepared to express an opinion as to whether private cars should be paid for on a per diem or a mileage basis, or whether mileage should be paid for the return empty movement. He said there were many different angles to be considered in connection with the amount of compensation, and that if one carrier by better business acumen could make its cars earn more it should be entitled to the greater profit. The beef traffic, he said, is regular throughout the year, while the fruit business is only temporary, and the better the service the road can give the more it can make out of it.

F. E. Bolte, superintendent of transportation of the Wabash, said that the Wabash now owns no refrigerator cars, those it formerly owned having been turned over to the American Refrigerator Transit Company, owned by the Wabash and Missouri Pacific. The refrigerator service is expedited whether A. R. T. or packers' cars are used, but the A. R. T. cars may be loaded for the return movement, while the packers object to their cars being so loaded. Asked why they could load the A. R. T. cars, he said, "we have not a man behind us with a traffic club." He thought that private cars and railway cars

car from the icing point to the loading point, but mileage is paid to the car owner. In one case this haul is 60 miles. He could not testify as to the age or condition of the equipment furnished.

George W. Creighton, general superintendent eastern Pennsylvania division of the Pennsylvania Railroad, testified regarding the icing station at Altoona, operated by the Armour Car Lines. The Pennsylvania pays \$2.50 per car for the ice used, and the charge to the shipper, however, is at the tariff rate of \$2.50 per ton for the actual consumption, which is usually less than a ton. The road is considering establishing an icing station at Huntingdon, Pa., in which case the Altoona station would be abandoned. The road has no regular check on the amount of ice placed in the cars.

W. C. Maxwell, general traffic manager of the Wabash, was also questioned about the Delray icing station and the stations operated by the road at Decatur, Ill., and Moberly, Mo. He was asked about complaints from the Cudahy company, that its cars were discriminated against in the icing at Delray, but said these complaints had been investigated and he believed them unfounded. He thought the public was well served at a low price—\$2.50 per ton for ice, which had been fixed by the Central Freight Association several years ago. He was also asked about his efforts some time ago to impose a charge for the salt used with the ice in the meat cars, which had been furnished free, and Attorney Boyle asked him to produce a series of letters, which the commission apparently had copies of, including correspondence with the Chicago, & Alton regarding the charge which both roads made effective, and letters

TABLE IV.—COMPARATIVE STATEMENT OF MILEAGE OF SHIPPERS' CAR LINES AND RAILROAD CAR LINES.

	Private Car Lines owned or controlled by shippers				Private Car Lines owned or controlled by railroads			
	Loaded		Empty		Loaded		Empty	
	Miles	Per cent.	Miles	Per cent.	Miles	Per cent.	Miles	Per cent.
Eastern Railroads								
Chicago & Erie.....	4,171,441	50.9	4,017,914	49.1	4,335,114	72.9	1,616,600	27.1
Erie	12,314,131	52	11,350,860	48	14,821,155	77.5	4,294,262	22.5
Pennsylvania R. R.....	12,750,516	51	12,154,577	49	3,878,758	63.5	2,224,405	36.5
Penna. Co. and P. C. C. & St. L. Ry.....	14,487,046	51.6	13,561,951	48.4	4,482,482	59	3,106,792	41
Totals	43,723,134	51.6	41,085,302	48.4	27,517,509	71	11,242,059	29
Western Railroads								
Chicago & North Western.....	7,570,636	54.6	6,305,260	45.4	9,591,952	79.9	2,414,893	20.1
Chicago, Burlington & Quincy.....	8,759,051	63	5,140,345	37	9,095,964	80	2,265,922	20
C. M. & St. P. and C. M. & P. S.....	8,954,156	53.9	7,658,573	46.1	5,741,504	77.3	1,680,222	22.7
Totals	25,283,843	57	19,104,178	43	24,429,420	79.3	6,361,037	20.7

should be paid for on the same basis, per diem, because he saw no good reason for making any distinction, and that under the mileage basis no payment should be made for the return movement. "By settling for the railroad cars on a per diem basis and the privately owned cars on a mileage basis," he said, "you create a distinction in favor of the private car which is owned by a corporation or firm that originates or controls a great deal of traffic, and anyone who has had any experience with railroads at all knows just exactly what that means in the handling of their cars." Mr. Bolte was cross-examined at length by Luther M. Walter, attorney for Morris & Company, and several other packers' car lines, regarding his reasons for wanting to put all cars on the same basis, without allowing for the higher cost of refrigerator cars. He said private cars earned more on a mileage basis than they would on a per diem basis.

J. T. King, general superintendent transportation Atlantic Coast Line, was questioned regarding his company's exclusive contract with the Armour Car Lines, for the furnishing of refrigerator cars. The Armour company performs the icing at points designated by the railroad, and the charges to shippers for icing are shown in the railroad's tariff, \$2.50 a ton for packing house products and \$5 for other commodities. There is practically no supervision of the icing by the railroad. He did not know what the ice costs the Armour company. In case of complaints by shippers as to the icing the road has to depend on the Armour company for the evidence. Cars are usually returned empty. There is no revenue for the movement of the

from the packing companies protesting against the charge and finally stating that the Alton had withdrawn it. These contained the hint that if the Wabash expected to participate in the competitive business from Kansas City it had better line up its tariffs with those of the Alton. The charge for salt was then withdrawn. Attorney Boyle said he had brought out this point to show the influence of the packers over the refrigeration charges. Mr. Maxwell would express no opinion as to whether private cars should be paid for on a mileage or per diem basis. He thought it would not be practicable for the railways to own their own refrigerator and other special equipment unless there was a very large pool to handle the distribution throughout the country in accordance with the fluctuating demands of the traffic. He said there is an economic waste in the present use of refrigerator cars, and that if shippers want them they should pay at least \$5 a car more than for box cars. The American Refrigerator Transit Company is paid one cent a mile and also receives a commission for soliciting business. A commission of 12½ per cent. was formerly paid to the Chicago Refrigerator Despatch and to the Shippers' Refrigerator Company, but the arrangement has been terminated and these companies are now subsidiaries of the A. R. T.

R. T. Adamson and Mr. Charters, of the Atlantic Fruit Distributing Company, protested against the character and condition of the cars furnished by the Armour Car Lines, which have exclusive contracts with the railways on which they are dependent.

At the Thursday evening session, when F. W. Ellis, vice-president of the Armour Car Lines, took the stand. C. A. Severance appeared as special counsel for the company, and announced he would object to all inquiries regarding the private business of the company. Attorney Boyle asked a series of questions for the purposes of the record, and the objection was presented and overruled by Commissioner McChord, who ordered the witness to answer, and the witness refused. The form of the objection is as follows: "The question is objected to upon the ground that it relates to the private business and affairs of the Armour Car Lines, and that neither under the act of Congress nor under the orders which have been entered in this proceeding has this commission any jurisdiction, right or authority to inquire into such matters, or to demand the information which the question calls for, and, with all due respect to the commission, we are constrained to advise the witness that he is not required to, and ought not to, answer the questions."

The questions thus objected to related to the ownership of stock in the Armour Car Lines, the relation of its officers with Armour & Co., the contract between the car lines and Armour & Co., and matters in connection with the investment, expenses, profit or loss of the business.

The company had refused to furnish information of this character in reply to the commission's interrogatories, and the correspondence in which the company had stated its position was put into the record. Questions regarding the relations of the car lines with the railways the witness answered. The company owns about 15,000 refrigerator cars, of which about 8,000 are used for the transportation of packing-house products, and the rest for fruit and vegetable traffic. Cars are furnished in small quantities to other packers. Mr. Ellis described in a general way the operation of the company's various icing plants, but declined to give cost figures. About 5 per cent. of all the ice purchased by the Armour Car Lines is used for the business of Armour & Co. A list of the icing stations was included in the record. Mr. Boyle finally stated that there was no object in continuing the questioning further, and asked that the commission direct that proceedings be instituted to require the respondent to answer.

He further stated, however, that in view of the intimated private nature of the business of the Armour Car Lines it might be well for the commission to consider why and by what right the officials of the Armour Car Lines ride on interstate passes furnished by railroads. He then placed in the record a memorandum of the railroads furnishing such passes and the names of the men to whom they were issued, compiled from reports made to the commission by the roads. Mr. Ellis said the passes were issued to employees of the car lines engaged in the handling of fruit under refrigeration for the railroads, as provided in contracts with the roads.

Commissioner McChord stated that the commission would proceed in the proper tribunal to require the furnishing of the information denied by the Armour Car Lines and that the pass matter would be considered later.

At the Friday morning session A. R. Fay, traffic manager of Swift & Co., stated it as the intention of his company to furnish all information desired. He testified that the Swift Refrigerator Transportation Company's cars are kept in practically continuous service, and that the profit on the investment is only about 1 per cent. The mileage paid for the return empty movement is taken into consideration in the fixing of the freight rates and accounts for what he considered the high rates on eastern shipments of meat. His company has rented cars to the Norfolk & Western at \$1 per day. He said a per diem payment would be justified if it were made high enough to give a return on the investment, but that refrigerator cars represent a much greater investment than ordinary cars, costing about \$1,400. This, he said, was an increase of about 65 per cent. in four or five years, and the cost of repairs has been greatly increased by damages to cars in hump yards.

H. L. Osman, superintendent of the car department of Morris & Co., said that his company's cars earned only 4.71 per cent. on

the investment in 1912, not allowing for depreciation, and that the company would be glad to turn its cars over to the railroads for a fair price. He also complained of the railroad treatment of private cars and submitted a table showing that the net earnings per car had decreased from \$22.74 in 1909, to \$19.31 in 1913.

At the session on Saturday E. F. McPike, manager of the Central Fruit Despatch, testified that all of its stock is owned by the Illinois Central. The company was organized in order to put its cars on a mileage basis instead of the per diem basis, which at the time was 35 cents a day. Most of its cars were purchased from the Illinois Central. From March 1, 1912, to November 30, 1913, the earnings were \$12.48 per car per month. The books of the company, he said, did not correctly show whether or not the enterprise was profitable because some of the facilities of the Illinois Central were used without charge and because many of the overhead charges were borne by the Illinois Central.

J. S. Leeds, manager of the Santa Fe Refrigerator Despatch, said the despatch line equipment is all operated under lease from the Santa Fe. The separate organization was formed for convenience and efficiency of service. The company is able to load approximately 70 per cent. of the cars in return movement, making the percentage of loaded mileage about 85. The icing stations are owned by the railway. East of the Rocky mountains the icing charge is \$2.50 per ton and an additional charge is made for salt. The icing charge is based on the cost of the service. There is no intention of making a profit on it. Asked why the charge is not uniform throughout the country the witness suggested the commission round up the traffic officers and ask them. He thought the per diem basis of payment impracticable for refrigerator cars, because the service is different, and because the cars cost more than other kinds.

B. W. Redfearn, president of the Frisco Refrigerator Line, said the company was organized in order to get enough cars and to offer an improved service. A separate organization, he thought, contributed to the efficiency of the service.

C. M. Secrist, vice-president and general manager of the Pacific Fruit Express, testified on Monday regarding the operation of refrigerator cars over the Union Pacific and Southern Pacific.

RECORD OF BLOCK SIGNAL MILEAGE

The Lehigh & Hudson River, which extends from Belvidere, N. J., northward to Maybrook, N. Y., 73 miles, will, within a month or two, be equipped with automatic block signals throughout its length. This road forms one section of the route of the Federal Express between Boston and Washington, over the Poughkeepsie bridge. Twenty-three miles of this signaling was in use on January 1, and should have been shown in our annual summary of block signal mileage, which was printed January 2, page 34. That summary should be further corrected by increasing the total mileage of road block signaled on the Erie and its subsidiaries to 1,752 miles, and that of the New York, Philadelphia & Norfolk (including the Cape Charles Railroad) to 120 miles. The Erie has increased its automatic block signaling 308 miles, and the manual block system has been diminished by a like figure; but there have also been additions to the length of road worked by the manual system, aggregating 66 miles. Except in the items relating to the roads mentioned no important information has come to hand since the publication of the table. The mileage of the Spokane, Portland & Seattle block signaled should be 5.3, the larger figure shown in the table (7 miles) being incorrect.

There is now a considerable mileage of automatic block signaling in Canada, viz.: Canadian Pacific (east of Winnipeg), 170 miles; Michigan Central, 245 miles; Toronto, Hamilton & Buffalo, 37 miles; total, 452 miles. The Canadian Pacific has 63 miles worked by the electric train staff. The Dominion Atlantic reports its whole line, 287 miles, as worked by the manual block system.

The Panama Railroad has 35 miles of its line, single track, equipped with automatics, and on 33 miles, part double track, the manual block system is in use; but only in the day time.

NEW YORK COURT SUSTAINS ADVANCED FARES

The Supreme Court of New York, Appellate Division, third department, in a decision by Mr. Justice Kellogg, handed down January 14, has annulled the order of the State Public Service Commission, Second district, issued in January, 1913, ordering a reduction of passenger fares on the New York, New Haven & Hartford between New York City and the stations on the company's main line within the state of New York—and a section of road about 25 miles long. The railroad, July 1, 1910, advanced the one-way single ticket rate between New York and Mount Vernon from 20 cents to 25 cents; the monthly ticket from \$5.60 to \$6.75, and the family ticket (50 trips), from \$10 to \$12.50. Fares to other stations were raised proportionately.

The first question before the court is whether the commission had the power to fix commutation rates. Citing certain cases, it was claimed that these lower rates are of a special nature; that while a state authority might regulate the ordinary passenger rates, it would be unfair to favor a special class of passengers. But as the company shows that nearly one-half of its passengers to and from New York are commuters, the statute authorizing the commission to regulate the rates is valid.

Was the commission's order properly made? The commission cannot annul the company's rates until it determines, on satisfactory evidence, that they are unjust and unreasonable. It seems that other New York suburban lines make lower rates, but this should not be controlling unless the conditions are alike. The New Haven road reaches New York over the Harlem (New York Central) under a contract made in 1848. Under an arbitration made in 1861 the New Haven now pays the Central 12.21 cents for each regular passenger and 4.07 cents for each season-ticket passenger. In addition to this the New Haven pays a part of the interest and maintenance on the Grand Central terminal, the proportion being based on the proportion of cars to and from New York; and in 1910 this was 42 per cent. of the total. Ordinary passenger cars carry an average of 30 passengers, while suburban cars carry an average of 46; and the average terminal charge for each commuter was calculated at 6.77 cents. The cost of propulsion of the New Haven trains averages 4.55 cents per passenger, so that the total payment to the New York Central is 10.84 cents per passenger, which, added to the propulsion charge, makes 15.39 cents, the actual cost of getting a commuter from Mount Vernon into the Grand Central terminal, making no allowance for maintenance of equipment, maintenance of way (on the two miles owned by the New Haven), general expenses, interest and taxes.

The order was made January 31, 1913. The question was whether the rates were reasonable at that time; but the issues had changed somewhat since the proceedings were begun in July, 1910. The court finds that the real facts were not passed on by the commission, and the commission really had not determined that the rates were unjust. The commission's four reasons for its conclusion were as follows:

"(1) That the public interests, and the interests of the company, require the lowest possible rate; that the question is not 'just how many tenths of a cent the rate can be raised or lowered for each mile of travel, but at what point it should be placed to enlarge the commuting business, increase the suburban population and thereby increase the general prosperity. Of course this point must be fixed with proper reference to the fair and reasonable returns to which the corporation is entitled over and above the actual out-of-pocket expenses involved in performing the service.' (2) That the increased rates had affected the localities unfavorably. (3) That the revenue derived by the company from the increased rates was not proportionate to the increase; that the rates had in fact lessened traffic. (4) That the tollage and terminal charges should be wholly charged upon the entire road and not upon the passenger service into and out of the station."

It was recognized that the cost of wages and material had in-

creased, but much of the testimony on this point had to do with the change from steam to electric motive power, and it is uncertain and unsatisfactory.

The public interest does indeed demand a lower rate; but the low rates must not be approved if they are such as to put the road into bankruptcy or render it unable to continue a reasonable service. The commission seems to have allowed the company credit for actual "out-of-pocket" expenses; what is meant by this? If maintenance and general expenses, interest, etc., were excluded, the commission was proceeding on a wrong basis. The company should not deny the company what it wants simply because it is not good for the company. If a rate is reasonable the company may demand it even though the commission believes that a mistake has been made by the company in asking its just dues. Even if all the payments made by the New Haven to the New York Central are made a general charge on the New Haven treasury, it does not follow that these rates were unreasonable or unjust. The commission rested its determination on the erroneous conception that the new rates were illegal because the company had not rebutted the presumption that the old rates were reasonable.

The argument that tolls and rentals paid to the New York Central should be made a general charge has no foundation. The rent is not a fixed sum. It depends entirely upon the number of passengers carried. From the figures shown, it would be manifestly for the interests of the road to carry no commuters. Regulation of the rates by the state implies that each passenger shall pay an adequate compensation for the service he receives and shall not be required to pay for service furnished to another. In conclusion the court says:

"Upon a careful examination of the entire record it does not appear that the rates fixed by the company are unreasonable or unjust, and it does not appear from the reasons given by the commission that it has so found. It is confidently claimed that in the immediate future, if not now, the rentals received at the Grand Central station from others will reduce, if not substantially do away with, the terminal charges. The question is of great importance to a great many people. These questions can now be determined with quite a degree of certainty. The case is not only of great importance to the people but to the company, and should be disposed of upon the facts as they actually exist at the time the order is made. The company's rates can only be annulled if the circumstances actually existing make them unreasonable and unfair. In annulling the order of the commission it is better to leave the way open for a new application rather than send the matter back to the commission for a rehearing. Such course will eliminate from the record many unnecessary and conjectural things and confine the question to the real merits. The order of the commission is therefore annulled, without prejudice to a new application at any time upon changed conditions with reference to tolls or terminal charges."

DISSENTING OPINION

Mr. Justice Howard in a dissenting opinion declares that the sums paid by the New Haven to the New York Central should be made a charge on the whole New Haven system. The New Haven claims to be carrying passengers at less than cost. Why does it do this? Obviously because the New York terminal is an immensely valuable element in the prosperity of the New Haven road and it is willing to pay well for the privilege of bringing its passengers to and from that terminal. When the original contract was made, the New Haven road, looking into the future, was undoubtedly willing to submit to any plan, even the most unreasonable, if necessary, in order to secure this inestimable right. This right so clearly appertained to the entire railroad that the cost of it should be passed against the whole road. If the two roads have made a contract which bears too hard upon a certain class of travelers, then it becomes the duty of the commission to step in and regulate the rates so that they shall not become oppressive to a class of passengers affected by the contract. The commission has power to modify this contract, if necessary, or cause the execution of a new contract.

General News Department

The general offices of the St. Louis Southwestern and allied companies in St. Louis, have been removed to the seventeenth floor of the Railway Exchange building.

Advices from Philadelphia report that the Pennsylvania, in anticipation of increased business, has issued orders to send all freight cars needing repairs to the shops at once.

William L. Chambers, United States Commissioner of Mediation and Conciliation, has gone to Cleveland to consider differences between the New York, Chicago & St. Louis and its telegraphers.

A fire in the Union station at Chicago on January 23 caused damage estimated at about \$10,000 to the north towers of the building and to the restaurant kitchen. The fire started from a defective range in the kitchen.

The San Francisco Chamber of Commerce has adopted resolutions protesting against the proposed suit of the government to require the Southern Pacific to dispose of its control of the Central Pacific as "a commercial injury to the people of California."

Four persons were killed and twelve or more injured in a butting collision between a passenger train and a freight train on the Michigan Central near Jackson, Mich., on January 25. The freight train ran past a meeting point. The baggage and smoking cars were telescoped.

The New York State Civil Service Commission announces competitive examinations for the position of chief of division, bureau of statistics and accounts, Public Service Commission, First District, at \$3,300 yearly salary; and for statistician, Public Service Commission, salary \$1,800 to \$2,400.

The New York post office, which has a large branch office in the Grand Central Terminal, New York City, fronting on Lexington avenue and on Forty-fifth street, has taken a lease of two additional rooms in the terminal, aggregating 12,350 sq. ft. of floor space, to facilitate the handling of parcels. The rent of these two rooms is \$13,402.92 yearly.

Jesse Holdom, chairman, and W. F. M. Goss, chief engineer, of the Chicago Association of Commerce Committee on Smoke Abatement and Electrification of Railway Terminals appeared before the city council committee on railway terminals on January 22, and stated that the committee's report on electrification could not be completed before midsummer.

Bion J. Arnold, chief engineer of the Board of Supervising Engineers for the city of Chicago and the surface traction companies, addressed the electrical section of the Western Society of Engineers on Monday night, January 26, on "City Transportation—Subways and Railway Terminals." There was an unusually large attendance of members and guests on account of the local interest attaching to this subject.

The Pennsylvania Railroad reports that last year 823 fires occurred on its property, the smallest number of fires in a year since 1904. The fire loss for the year was \$271,288, the smallest, with the exception of one year, in the past 35 years. The methods of inspection and the fire-fighting facilities have been so improved that fewer fires occur, and employees extinguish many fires. The steady increase in the efficiency of the fire-fighting brigade was further developed last year by special training of employees.

Passenger train No. 41 of the Southern Railway was stopped by robbers at Facklers, Ala., on the night of January 23, and the express car and mail car were rifled; but it is said that not much of value was taken. The robbers compelled the engineman to take these two cars several miles ahead, away from the passenger cars; after the robbery had been finished the robbers themselves took the locomotive several miles further; and, after getting off they started the engine ahead, and it ran wild until it died.

The Chicago, Burlington & Quincy concluded its presentation of evidence on January 20 in the arbitration proceedings at Chi-

cago on the demands of its conductors and trainmen for increases in wages and changes in working conditions, which, according to Vice-president Hale Holden would cost the road \$1,076,000 additional a year, if allowed. The employees had previously submitted their side of the case. The Burlington's testimony, most of which was presented by Vice-president H.E. Byram, consumed 24 days.

The National Railways of Mexico has announced that service will be resumed at once from Laredo southward as far as Villaladama, the damaged bridges and track between these places having been repaired. It is reported that the Mexican government has been at work repairing the line between Saltillo and San Luis Potosi. Federal troops under General Joaquin Maass, Jr., protected the construction gangs. The government is attempting to establish communication into Monterey, stationing strong garrisons along the line as it is being repaired.

On the occasion of the annual meeting of the American Society of Civil Engineers in New York City, last week, a large party of the members, occupying a special train of nine cars, went to Clark's Summit, Pa., over the Delaware, Lackawanna & Western to view the important improvements recently made on this road (described in the *Railway Age Gazette* of December 5). While on the road, the president of the society and the president of the road exchanged messages by the Marconi wireless telegraph, now in experimental use on the Lackawanna.

Fog, in and around New York harbor on Tuesday last, delayed water transportation very seriously, and there were two slight collisions between ferry boats. Steamers from Long Island Sound ports coming in, in the morning, were obliged to wait outside Hell Gate all day and all night, 24 hours. On those steamers which had the Marconi wireless telegraph, the operators were kept busy with telegrams from passengers throughout the day. One man, running small power launches, did a profitable business throughout the day and into the evening carrying passengers to the shore. The North German Lloyd steamship *George Washington* was more than five hours in coming up the bay to her dock. The Cunard steamship *Campania* was held at the dock for many hours after her leaving time.

In the State Court at Rusk, Tex., January 21, the town of Palestine, after a thirteen-day jury trial, won its case involving the removal of the shops and general offices of the International & Great Northern from Palestine to Houston. The railroad company will ask for a new trial, and the attorney for Palestine will at the same time seek a writ of mandamus to compel the offices to be moved to Palestine from Houston immediately. If a new trial is refused, the road will appeal. An affirmation of the decision would make certain the return of the general offices to Palestine. The citizens of Palestine greeted the news of the decision with a big celebration. The principal issue submitted in the case was whether the citizens of Anderson county, acting through Judge John P. Reagan, made a contract in 1873 with the Houston & Great Northern in which the railroad obligated itself to maintain forever its shops and general offices in Palestine; and whether in 1875 certain citizens of Palestine made a contract with H. M. Hoxie, president of the Houston & Great Northern, in which it was agreed that the general offices should be maintained forever in Palestine.

Charles H. Murray, the flagman who figured in the rear collision of passenger trains at North Haven, Conn., September 2, was brought into court at New Haven January 21 and pleaded guilty to the charge of manslaughter. The judge, Hon. Milton A. Shumway, deferred sentence for a week, and then imposed a penalty of one year in jail; but he immediately added that he did not think it fair to hold Murray for more than his share of the responsibility for the wreck, and he suspended sentence, giving Murray his liberty in the custody of a probation officer. "Apparently," said Judge Shumway, "there was a defective system, or at least some other than this accused person was responsible, or mainly responsible, for this accident, and not Mur-

ray's failure to go back 1,200 or 3,000 feet to the rear of his train." Judge Shumway defined Murray's negligence as very remote, the real cause being the system under which he worked. He declared that investigation of the wreck had shown six contributory causes of the accident, of which Murray was the least. To this he added an expression of great doubt whether the wreck could have been averted even if Murray had gone back with his flag the whole distance required by the rules. August B. Miller, engineer, and Brace D. Adams, conductor, are still to be tried for manslaughter.

A Correction

Last week we published a photograph of Lord Strathcona which was copyrighted by Brown Brothers, New York, and to whom credit should have been given. Through a typographical error the credit line "Copyrighted by Brown Brothers, New York," was omitted.

Conductors Oppose Anti-Railroad Legislation

The Mississippi state legislative committee of the Order of Railway Conductors at a meeting on January 16, adopted resolutions including the following:

"Resolved, That we, the representatives of the Order of Railway Conductors, in session assembled, here express our disapproval of the passage of any law looking to the reduction of passenger rates; and we petition the legislature to pass some law to protect the companies from the large amount of money which is required to be expended, each year, on account of persons wilfully and wantonly trespassing upon the tracks; and we declare it to be our belief that where rational beings, knowing the dangers incident to the using of the tracks as a pathway, voluntarily take this risk, that except in cases of wilful negligence, no railway should be made liable for any injury occurring to such person.

"We further express our disapproval as to the added expense of requiring companies to increase their auditing department, so as to make two pay-days. The railroad employees have no complaint to make on account of the 30-day payment; and we believe that a payment every two weeks tends to encourage the wasting of the employees' money instead of conserving any real public purpose."

It was also decided that members of the order write to their representatives in the legislature and that a copy of the resolutions be sent to the chairmen of the railroad committees of the house and senate.

Renting Coal Cars

In a recent study of operation of the Chesapeake & Ohio the difficulty which the C. & O. is having in getting its coal cars returned by connections at Cincinnati was discussed at some length. The road is now trying to supply the needs of its coal operators in every way possible and one of these ways is by hiring coal cars from the builders. It pays on the 15th of each month a sum based on the daily rental of the cars for the preceding month. At the end of each six months an additional payment is made, part of which goes toward paying the purchase price of the cars and part for the interest on the investment in the cars. There is, of course, also an adjustment by which the car company pays interest on the money already paid by the railroad company toward the purchase price of the cars. This differs from a purchase of equipment through the issue of equipment trust certificates in that no large initial payment of from 15 to 20 per cent. is made on the equipment, and the arrangement is made directly between the railroad company and the car company so that there is no banker's commission on securities sold to the public, while on the other hand it has certain disadvantages, the principal of which are that it puts a monthly demand for cash on the railroad company, whereas equipment trust certificates would call only for semi-annual or annual payments.

Lehigh Valley Water Routes

The Lehigh Valley Railroad has made formal application to the Interstate Commerce Commission for authority to continue the operation of its boat lines. These water lines are as follows:

1. Vessels on the Great Lakes operated between Buffalo, N. Y., Manitowoc and Milwaukee, Wis., and Chicago, Ill.

2. Tugs and barges on the seacoast between Perth Amboy, N. J., and points on Long Island Sound and the New England coast.

3. Towing service between Perth Amboy, N. J., and various piers and docks in New York harbor and at intermediate points.

4. Lighterage and car float service in New York harbor between various piers and docks in New York and Brooklyn and points in Jersey City and immediately adjacent thereto.

These water lines are operated by the Lehigh Valley Transportation Company, the capital stock of which company is owned completely by the Lehigh Valley Railroad Company. The railroad also owns 97 per cent. of the capital stock of the Morris Canal & Banking Company, and on this account operates the canal and barges and canal boats between Phillipsburg, N. J., and Jersey City.

Proposed Government Railroad in Alaska

The bill to empower the President of the United States to build not more than 1,000 miles of railroad in Alaska, to make accessible the mineral and other resources of that territory, at an expenditure not exceeding forty millions of dollars, was passed by the Senate January 24 by a vote of 46 to 16; and it is expected that the measure will pass the House with little opposition. Four democratic senators voted against the bill and 15 republicans voted in favor of it. Both democrats and republicans declared that their approval of the bill was based on the ground of necessity and that there was no intention of establishing a precedent for Government ownership of railroads generally. The bill as passed by the Senate carries a provision that the price to be paid for existing railroads shall not exceed the cost of reproduction, less depreciation.

The bill places upon the President responsibility for the selection of the route from tidewater to the interior of Alaska and for construction, equipment and operation. It provides for a redemption fund into which shall be paid 75 per cent. of all moneys derived from the sale of public lands in Alaska. Machinery from the Panama Canal is made available for construction work.

The bill requires the Senate's approval of the appointment of civil engineers, who are to receive salaries of more than \$3,000, and forbids any payment for the goodwill of existing railways. It gives injured employees the right to sue the government and limits the government's defense to those provided for in the federal employers' liability law of 1908.

Railway Presidents on Government Ownership

F. A. Delano, president of the Chicago, Indianapolis & Louisville, and B. A. Worthington, president of the Chicago & Alton, were asked last week by the Chicago *Tribune* to give their views on government ownership of railways. They were quoted as follows:

"Before taking up the broad question of government ownership of railroads, why should we not consider the success or failure of the management of municipalities?" said Mr. Delano. "Are all cities well governed? The city council of Chicago this morning passed a budget which possibly may be subjected to the scrutiny of efficiency experts. It might be suggested that before government ownership of railroads is put into effect, they try municipal ownership of gas plants and street railways.

"The government owned Intercolonial railway of Canada has been cited repeatedly. I have been told that before elections the management of that road has found it advisable to increase the number of employees in the maintenance department.

"The point also has been made that the government's credit is so strong it would be able to take over railroad property easily. The government's credit today is so good because its debts are so small comparatively. If it should take over the debts of the railroads it is a question whether the credit would be as good."

"Certain it is that the magnitude of railroad operations in the United States warrants the most careful consideration of the proposition for government ownership and control of the railroads," said Mr. Worthington. "Under government ownership it is hardly possible we could expect the quick responsiveness to traffic requirements that exists under competitive conditions, nor

the ultimate efficiency and economy which are the prime incentives under private ownership.

"The possibility for wrongdoing and the difficulty of detecting it and applying remedial measures would be increased immeasurably; but the most important feature is that governmental ownership would destroy the individual initiative of almost 2,000,000 railroad employees now imbued with ambition. It would reduce them from free thinking individuals to automatons, subject to the military discipline of the most gigantic political machine that could possibly be devised, controlling, as it would, their annual incomes, which aggregate \$1,270,000,000.

"To concentrate this power in the hands of the chief executive of the nation—an elective office—or to a departmental board subject to the will of the chief executive, would be a most dangerous undertaking. The United States would be relegated quickly to the European standard of class distinctions; family connections would qualify applicants for official positions, and the working class never could hope to rise above a certain station."

Safety First on the New Haven

A "safety first" meeting was held at Boston on Sunday, January 25, at which over two thousand men were present. They were addressed by Howard Elliott, chairman of the board of directors of the New York, New Haven & Hartford; James H. Hustis, president of that road, and other officers.

"You have been accustomed to working with a list of 'don'ts,'" said Mr. Elliott, "and I shall now give you a list of 'do's.'"

"Do be careful. Do be alert and efficient. Keep always in good mental and physical health. Do be loyal, and stand up for the railroad in a manly fashion. Be ready always to give courteous and direct answers to the public. Show the public that it has a duty toward us."

Mr. Hustis, in the course of his address, said: "Charges have been made that organized labor was in part responsible for the terrible accidents that have taken place on our railroad. I want to take this opportunity to say that organized labor, as such, cannot be charged with intentionally taking a position that will tend to increase accidents."

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass. Next convention, May 5-8, Hotel Pontchartrain, Detroit, Mich.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Boston, Mass. Convention, May 19, 1914, St. Louis.

AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, New York.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, East St. Louis, Ill. Next convention, April 21, Houston, Tex.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, St. Louis, Mo.; 3d Thursday and Friday in May.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Buttrick, 29 W. 39th St., New York. Mid-year conference, New York, January 29, 30, 31.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOC.—H. G. McConnaughy, 165 Broadway, New York. Meetings with Am. Elec. Ry. Assoc.

AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 20-22, 1914, Los Angeles, Cal.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago. Next convention, March 17-20, Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Karpen Building, Chicago. June 15-17, Atlantic City, N. J.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—A. R. Davis, Central of Georgia, Macon, Ga. Next convention, July 20-22, Chicago.

AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 West 57th St., New York; 1st and 3d Wed., except June and August, New York.

AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wenlinger, 11 Broadway, New York; 2d Tuesday of each month, New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Baltimore, Md.

ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, Highland Park, Ill. Annual meeting, June 24, Minneapolis, Minn.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—C. W. Egan, B. & O., Baltimore, Md. Next convention, May, 1914, St. Paul, Minn.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 112 West Adams St., Chicago. Next convention, May 20-23, New Orleans, La.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York.

ASSOCIATION OF WATER LINE ACCOUNTING OFFICERS.—W. R. Evans, Chamber of Commerce, Buffalo, N. Y.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—L. D. Mitchell, Detroit Graphite Co., Detroit, Mich. Meeting with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and August, Montreal.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursday, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—L. S. Pomeroy, Old State Capitol building, St. Paul, Minn.; 2d Monday, except June, July, August and September, St. Paul.

ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after second Saturday, Harrisburg, Pa.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. H. Hiles, Oliver building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Richmond, Va. Next convention, May 20-22, Galveston, Tex.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, rue de Louvain, Brussels, Belgium. Convention, 1915, Berlin.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, 922 McCormick building, Chicago. Annual convention, May 18-22, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 829 West Broadway, Winona, Minn. Next convention, July 14-17, Hotel Sherman, Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio. Next convention, third Tuesday in August.

MAINTENANCE OF WAY & MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—T. I. Goodwin, C. R. I. & P., Eldon, Mo. Next convention, November 17-19, 1914, Detroit, Mich.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Next annual meeting, May 26-29, Hotel Waldron, Philadelphia.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Karpen building, Chicago. June 10-12, Atlantic City, N. J.

MASTER CAR & LOCOMOTIVE PAINTERS' ASSOC. OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass.

NATIONAL RAILWAY APPLIANCE ASSOC.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Meetings with Am. Ry. Eng. Assoc.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.

NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3rd Friday in month, except June, July and August, New York.

NORTHERN RAILROAD CLUB.—C. L. Kennedy, C. M. & St. P., Duluth, Minn.; 4th Saturday, Duluth.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria; 2d Thursday.

RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOC.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Assoc. Ry. Elec. Engrs.

RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, Mobile & Ohio, Mobile, Ala.

RAILWAY GARDENING ASSOCIATION.—J. S. Butterfield, Lee's Summit, Mo.

RAILWAY DEVELOPMENT ASSOCIATION.—W. Nicholson, Kansas City Southern, Kansas City, Mo.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio.

RAILWAY SUPPLY MANUFACTURERS' ASSOC.—J. D. Conway, 2135 Oliver bldg., Pittsburgh, Pa. Meetings with M. M. and M. C. B. Assocs.

RAILWAY TEL. & TEL. APPLIANCE ASSOC.—W. E. Harkness, 284 Pearl St., New York. Meetings with Assoc. of Ry. Teleg. Sups.

RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill. Next convention, September 8-10, 1914, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.

SALT LAKE TRANSPORTATION CLUB.—R. E. Rowland, 519 Boston building, Salt Lake City, Utah; 1st Saturday of each month, Salt Lake City.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmonds, 3868 Park Ave., New York. Meeting with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St. Station, Chicago.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.

TOLEDO TRANSPORTATION CLUB.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillsburn, N. Y. Meetings with Roadmasters' and Maintenance of Way Association.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie, Pittsburgh, Pa.; meetings monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library building, St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7122 Stewart Ave., Chicago. Next convention, June 16, Jacksonville, Fla.

TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; first Saturday after first Wednesday.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, L. S. & M. S., Detroit, Mich.; meetings monthly.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y. Next meeting, August, Chicago.

UTAH SOCIETY OF ENGINEERS.—Fred D. Ulmer, Oregon Short Line, Salt Lake City, Utah; 3d Friday of each month, except July and August.

WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, Karpen building, Chicago; 3d Tuesday of each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Monday in month, except July and August, Chicago.

Traffic News

The Traffic Club of Pittsburgh will hold its twelfth annual dinner March 27 at Memorial Hall, Pittsburgh.

The Chamber of Commerce and other commercial organizations of Roanoke, Va., have adopted resolutions approving an increase of 5 per cent. in freight rates on the trunk line railroads.

The Fort Smith & Western is to run next month an agricultural instruction train, starting from Guthrie, Oklahoma, February 2. Lectures will be given by men from the State Agricultural College.

Senator Healy, of Westchester County, has introduced in the legislature of New York two bills to restore the former commutation rates on the New York, New Haven & Hartford, the purpose being to get around the decision of the Supreme Court, sustaining advanced rates in this territory, as reported in another column of this paper. Senator Healy has also introduced a bill to authorize the Public Service Commission to suspend increased rates, pending investigation, as the Interstate Commerce Commission does with interstate rates.

The sub-committee on weighing of the American Railway Association Committee on Relations Between Railways held a meeting at Chicago on January 21 followed by a meeting on January 22 and 23 with a committee of the National Industrial Traffic League. Substantial progress was made toward reaching an agreement on a set of rules regulating the practice of weighing carload freight in accordance with the report made by the Interstate Commerce Commission, which suggested that the railways and shippers get together on the matter. Another joint meeting will be held at Washington on February 10.

The committee on railroads and franchises of the Mississippi legislature has reported adversely on the proposal to limit the fare on railroads in that state to 2 cents a mile. The vote in the committee stood 9 to 7. Representative May, who introduces the bill, was quite bitter in his denunciation of the railroads and will make a strong fight on the floor of the House of Representatives to have the committee's report reversed. He will ask the legislature to pass the bill as he originally introduced it, but the prevailing opinion is that the committee's report will be sustained. The sentiment of the public seems to be that it would be unwise at this time to impose more burdens on the railroads.

The Public Service Commission of New York, Second district, has approved of the "block system" prepared by the express companies, showing rates for the transportation of merchandise within the state; but has imposed certain limits on the rates between the principal cities. In view of the time required to prepare the new tariffs, some of the short distance changes will not go into effect until March 1. Between New York City and Buffalo, the American Express Company, running wholly within New York state, has to compete with other companies running through New Jersey and Pennsylvania; and the rates prescribed by the New York commission will therefore probably be made to correspond with those prescribed by the Interstate Commerce Commission.

The traffic department of the Missouri Pacific-Iron Mountain system has issued a circular based on information furnished by H. C. Dinkins, special representative of these roads, who was recently assigned the duty of visiting the Latin American countries and making a study of trade conditions and opportunities there, dealing with conditions in Chile and Argentine Republic. It gives much valuable first-hand information with reference to shipping facilities at the principal cities, the names of the foremost shipping and receiving agents, the more important articles of import and export and the commodities of which the different shipping concerns make specialties. The principal lines of industry are also set forth, as well as the natural resources of the countries. According to the report, the merchants and dealers of the South American countries are anxious for better service from the gulf ports.

New Orleans Traffic Club

The New Orleans Traffic Club was organized in that city last week, and the following officers elected: F. P. Batterford, chairman; D. A. Dimitry, vice-chairman; E. O. Bynum, secretary, and J. B. Owen, treasurer. The club has 25 charter members and it is proposed to hold meetings once a week.

Traffic Club of Chicago

The seventh annual banquet of the Traffic Club of Chicago was held at the Hotel La Salle on January 27, with approximately 700 members and guests in attendance. The speakers were: John D. Shoop, George T. Buckingham and Leroy T. Steward.

The Canadian Pacific as an Agricultural Promoter

The Canadian Pacific has made its appropriations for the Department of Natural Resources for 1914. The policy of colonization and land settlement will be carried on with vigor. Appropriations have been passed for preparing 130 ready-made farms; for improvements on 400 farms under the loan farm scheme; for providing live stock to settlers on Canadian Pacific lands, and for the operation of the Canadian Pacific demonstration and live stock farms. The irrigation projects on the irrigation block, east of Calgary, and at Lethbridge, Alberta, will be completed. The appropriations on capital account amount to \$3,831,000, but these do not include large sums for the operation of land agency branches, etc.

Chicago Grand Jury Investigating Alleged Rebates

The federal grand jury at Chicago last week began an investigation of charges of rebating involving several prominent Chicago firms and railways entering Chicago. They appear to be based on technicalities.

One of the cases involves an alleged contract by the Pittsburgh, Cincinnati, Chicago & St. Louis to refund to the B. A. Eckhart Milling Company the switching charges on two cars of grain switched into the plant for every car of milled product shipped out. T. W. Brophy, secretary of the milling company, gave out a statement that this contract had been in existence for 18 years and that in 1906 the railway had agreed to publish it, and that his company had assumed it had been done.

Another case involves shipments of packing house products by Swift & Co. to Owosso, Mich., over the Ann Arbor, at carload rates, when in fact a part of the shipments were taken from the car at local points en route. An explanation was made that the packing company had discovered the situation later and had made a settlement based on the less than carload rates. Another case involves the David Rutter Coal Company and the Chicago & North Western, and another the W. H. Merritt Company, grain dealers, and the Wabash and Grand Trunk. This case seems to be similar to the Eckhart case. A large number of officers of the railways and of the firms involved have appeared before the grand jury.

Summary of Revenues and Expenses of Steam Roads

The Bureau of Railway Economics' summary of revenues and expenses and comments thereon for the month of November, 1913, are as follows: The railways whose returns are included in this summary operate 224,870 miles of line, or about 90 per cent. of the steam railway mileage in the United States. The operating revenues for the month of November, 1913, amounted to \$261,598,215. This includes revenues from freight and passenger traffic, from carrying mail and express, and from miscellaneous sources connected with rail operation. Compared with November, 1912, the total operating revenues show a decrease of \$8,940,094. The total operating revenues per mile of line averaged \$1,163 in November, 1913, and \$1,212 in November, 1912, a decrease of \$49, or 4.1 per cent. Freight revenue per mile decreased 6.0 per cent., while passenger revenue per mile increased 0.8 per cent.

Operating expenses, which include all the costs of maintaining track and equipment, operating trains, securing traffic, and of administration, amounted to \$185,281,614. This was \$5,546,773 more than for November, 1912. These operating expenses per

mile of line averaged \$824 in November, 1913, and \$806 in November, 1912, an increase of \$18 per mile, or 2.3 per cent.

Net operating revenue, that is, total operating revenues less operating expenses, amounted to \$76,316,601. This was \$14,486,867 less than for November, 1912. Net operating revenue per mile of line averaged \$339.38 in November, 1913, and \$406.94 in November, 1912, a decrease of \$67.56 per mile, or 16.6 per cent.

Taxes for the month of November amounted to \$11,696,961, or \$52 per mile, an increase of 14.9 per cent. over November, 1912.

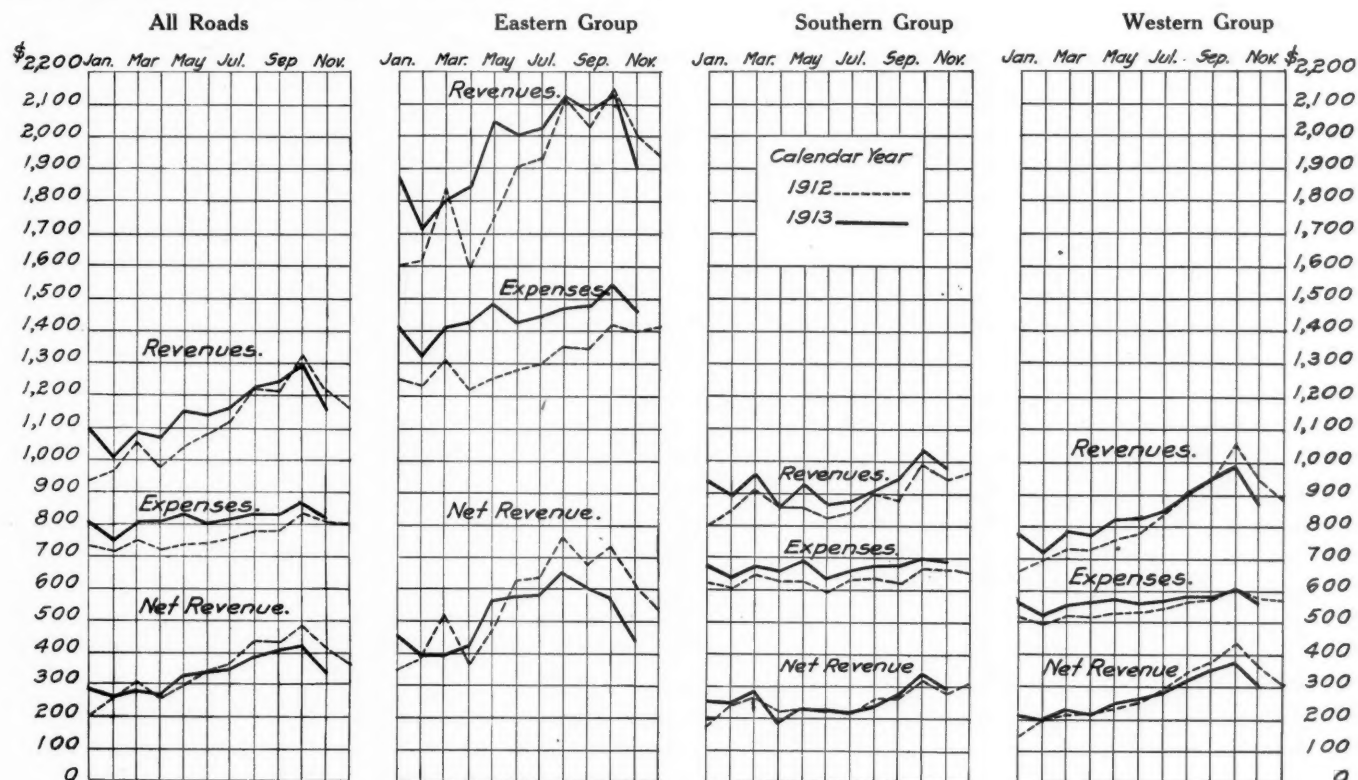
Operating income, which is net revenue from rail and outside operations, less taxes, averaged \$286 per mile of line, and in November, 1912, \$363, thus decreasing \$77, or 21.2 per cent. Operating income from each mile of line for each day in November averaged \$9.53, and for November, 1912, \$12.09. Operating income is that proportion of their receipts which remains available to the railways for rentals, interest on bonds, appropriations for betterments, improvements, new construction, and for dividends.

The operating ratio for November, that is, the per cent. of total operating revenues absorbed in operating expenses, was

previous fiscal year reveals an increase in total operating revenues per mile of 0.3 per cent., an increase in operating expenses per mile of 6.0 per cent., and a decrease in net operating revenue per mile of 10.2 per cent. This net operating revenue per mile of the eastern railways decreased 16.0 per cent. as compared with the corresponding period of the previous year, that of the southern railways increased 2.0 per cent., while that of the western railways decreased 7.9 per cent.

When the returns for the eleven months of the calendar year 1913 are compared with those of the corresponding months of 1912, they show an increase in total operating revenues per mile of 4.5 per cent., an increase in operating expenses per mile of 8.0 per cent., and a decrease in net operating revenue per mile of 3.2 per cent. This net operating revenue per mile decreased 7.8 per cent. in the eastern district as compared with the corresponding period of the previous year, increased 4.1 per cent. in the southern district, and decreased 0.8 per cent. in the western district.

The diagram shows the variations in operating revenues, operating expenses, and net operating revenue per mile for the separate months of the calendar year 1912 and of the calendar year 1913 to date.



Monthly Revenues and Expenses Per Mile of Line in 1913

70.8 per cent., which is comparable with 67.2 per cent., in October, 1913, and 66.4 per cent. in November, 1912.

The railways of the eastern district show a decrease in total operating revenues per mile of line as compared with November, 1912, of 4.6 per cent., the railways of the southern district an increase of 4.7 per cent., and the railways of the western district a decrease of 6.2 per cent.

Operating expenses per mile increased 5.4 per cent. on the eastern railways, increased 4.6 per cent. on the southern railways, and decreased 1.7 per cent. on the western railways. For the eastern railways net operating revenue per mile decreased 27.5 per cent., for the southern railways it increased 5.1 per cent., while for the western railways it decreased 13.5 per cent. Taxes per mile in the eastern district show an increase of 17.2 per cent., in the southern district an increase of 10.6 per cent., and in the western district an increase of 14.4 per cent. Operating income per mile decreased 35.0 per cent. in the East, increased 4.6 per cent. in the South, and decreased 17.0 per cent. in the West.

Comparison of the returns for the five months of the current fiscal year with those of the corresponding months of the

The following table shows the per cent. of operating revenues consumed by each class of expenses:

	PER CENT. OF TOTAL OPERATING REVENUES		REVENUES		Eleven months	
	November		Calendar year ending December 31	November	November 30	November 30
Freight revenue	1913	1912	1912	1911	1913	1912
Passenger revenue	70.9	72.3	69.5	68.4	69.5	69.5
Other transportation	20.9	19.9	22.4	23.6	22.5	22.4
Non-transportation	7.1	6.7	7.0	7.0	6.9	7.0
	1.1	1.1	1.1	1.0	1.1	1.1
Maintenance of way and structures	12.8	12.9	12.8	12.7	13.8	12.9
Maintenance of equipment	17.3	15.4	16.0	15.7	17.1	16.0
Traffic expenses	2.0	1.8	2.0	2.1	2.1	2.0
Transportation expenses	36.3	34.1	35.5	35.4	35.7	35.4
General expenses	2.4	2.2	2.4	2.5	2.4	2.4
Total operating expenses (excluding outside operations and taxes)	70.8	66.4	68.7	68.4	71.1	68.7

LONG DISTANCE WIRELESS MESSAGE RECEIVED AT PORT SAID.—The wireless telegraph station at Port Said has recently done some good long distance work. A short while ago it received a message from Key West, Fla., which is 5,200 miles away.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The commission has further suspended from February 7 to August 7 a tariff of W. H. Hosmer, agent, containing increased rates on linseed oil in carloads from Minneapolis, Minn., and points taking the same rates to points in central freight association territory.

The commission has suspended from February 1 to June 1, a schedule in a Grand Rapids & Indiana tariff, by which it was proposed to increase rates on plaster in carloads from Grand Rapids, Mich., to Armsby, Ill. The present rate is 9½ cents per 100 lb. It is proposed to increase it to 16½ cents.

The commission has suspended to May 31, certain schedules in tariffs of the Atchison, Topeka & Santa Fe, the Missouri, Kansas & Texas, and the St. Louis & San Francisco, involving increased rates on corn, in carloads, and other grain and grain products, from points in Minnesota to certain stations located in Missouri, Kansas and other states.

The commission has suspended from February 1 to June 1, a rule in a tariff of W. H. Hosmer, agent, providing for the application of Class B ratings on shipments of potatoes in carloads between points in western classification territory. The new rule is published as an exception to the western classification which names Class B ratings on this commodity.

The commission has suspended from January 25 to May 25, an item in a Missouri Pacific and St. Louis, Iron Mountain & Southern tariff, by which it was proposed to increase the rate on hogs, in carloads, from Sioux Falls, S. D., to Kansas City, Mo. The present rate is 22 cents per 100 lb., and the proposed rate is 36½ cents per 100 lb., an increase of 14½ cents.

The commission has suspended from January 23 to March 29, an item in a Chicago, Rock Island & Pacific tariff, reading as follows: The inbound switching on grain at Kansas City, Mo., Armourdale (Kansas City, Kan.), will not be absorbed until 90 per cent. of the inbound tonnage has been forwarded as grain, or grain products, from Kansas City, Mo., or Armourdale, over the C. R. I. & P. rails.

The commission has suspended from February 14 to June 14, certain schedules in a tariff of F. A. Leland, agent, by which it was proposed to increase rates on cement in carloads from Ada, Okla., to a number of points in Louisiana. Thus, the present rates from Ada to Jones Spur, La., a point on the Iron Mountain just south of the Arkansas line, is 15 cents per 100 lb. It is proposed to increase it to 26¼ cents.

The commission has suspended to May 1, certain schedules in the tariffs of the Chicago, Peoria & St. Louis, and Chicago, Rock Island & Pacific, by which it was proposed to increase rates on malt, in carloads, from St. Paul, Minn., and other points taking the same rates, to New Orleans and other points, the present rate being 25 cents per 100 lb. and the proposed rate 30½ cents. Rates from Pekin and Peoria, Ill., to New Orleans, are also increased 4 cents per 100 lb.

The commission has suspended from January 25 to May 25, an item in a Missouri Pacific, and St. Louis, Iron Mountain & Southern tariff, by which it was proposed to increase rates on malt and malt sprouts, in carloads, from Sioux Falls, South Dakota to Kansas City, Mo., and certain other Missouri river points. The present rate on those commodities, in carloads, minimum weight 30,000 lb., is 13 cents per 100 lb.; the proposed rate is 17½ cents, and the carload minimum weight on malt is increased to 40,000 lb.

Cattle Rates to Owensboro, Kentucky

Rock Spring Distilling Company et al. v. Illinois Central, et al.
Opinion by Commissioner Meyer:

The commission found in a previous decision that the rates on cattle from St. Louis to Owensboro, Ky., should not exceed 15 cents per 100 lb., with a minimum weight of 20,000 lb.; and from

Chicago, \$32 per car. A rehearing has been granted upon the petition of the carriers, who have sought to establish the propriety of a rate of \$45 per car from East St. Louis, and a rate of 25 cents per 100 lb., minimum weight of 20,000 lb., from Chicago. With regard to the rates from East St. Louis, the commission adheres to the principle announced in the case of the Alton Board of Trade v. Chicago & Alton, and believes that a rate of \$45 per car from East St. Louis to Owensboro, a distance of 204 miles, does not bear a proper relation to the rate of 15 cents per 100 lb., minimum weight of 20,000, via the short line to Louisville. The order of the commission in the original case, as far as East St. Louis is concerned, is therefore not changed. The commission holds, however, that the rate of \$32 per car from Chicago to Owensboro should be changed to 18 cents per 100 lb., minimum weight of 20,000, plus \$2 per car bridge toll, which is the usual fifth class rate. The order was changed in this regard because, in formulating the former rate an error resulted from a misunderstanding regarding the rates in effect at the time the order was made. (29 I. C. C., 18.)

Santa Rosa, Cal., Awarded Better Rates

Santa Rosa Traffic Association v. Southern Pacific et al.
Opinion by Commissioner McChord:

In the original report on this case the commission declared that the maintenance of terminal rates to Santa Clara, San Jose and Marysville, Cal., and the absence of similar rates to Santa Rosa, Cal., was unduly discriminatory to Santa Rosa. The three former towns are none of them actually terminal points, for in each instance a wagon-haul from the nearest port is necessary to complete delivery. Santa Rosa, on the other hand, is connected by an electric line to tidewater, so that an available rail and water route from San Francisco is completed. A rehearing has now been held and the former ruling that defendants should remove the discrimination against Santa Rosa is affirmed. A petition of the Fresno Traffic Association as intervener, asking for better rates to that point on similar grounds, is dismissed for want of proof. (29 I. C. C., 65.)

No Joint Rates Need Be Established

Richmond-Eureka Mining Company v. Eureka Nevada Railway et al. *Opinion by Commissioner Clements:*

The Eureka Nevada is a narrow gauge line running from Palisade, Nev., a point on the Southern Pacific, to Eureka, 84 miles distant, and has a branch about four miles in length from Eureka south to Ruby Hill. Complaint is made against a rate of \$235 per net ton on ore of a value not in excess of \$15 per ton from Eureka, Nev., to Palisade, Nev., when destined to Midvale, Utah, and joint through rates from Eureka to Midvale are requested instead. The commission finds that the rate is not unreasonable in view of the fact that the Eureka Nevada operates under conditions of great sparsity of traffic and that to handle this heavy traffic in volume would have to provide itself with suitable engines and cars and improve its tracks at an expense which appears not to be called for as to its other traffic. The commission does not consider the establishment of through rates from Ruby Hill to Midvale because the line between Eureka and Ruby Hill has been partially destroyed, and it is not a question for determination by the commission as to whether it is the duty of the owner to restore and operate it or not. (29 I. C. C., 62.)

Lake and Rail Butter and Egg Rates

Opinion by Commissioner Meyer:

The respondents, the Mutual Transit Company, the Western Transit Company and the Anchor Line, operating boats on the Great Lakes between Buffalo and Lake Superior and Lake Michigan ports, have recently issued supplements to their tariffs, adding to the list of commodities not accepted by them for shipment butter, eggs, pressed meat and live or dressed poultry. They defend this procedure by referring to their lack of facilities for handling this sort of traffic and the necessary expense and difficulty which must be suffered in order to enable them to handle it in proper fashion. The commission believes that much of this traffic from portions of Minnesota, North and South Dakota, northern Michigan and Wisconsin to Buffalo and points East, which is now handled on the all-rail lines, could

be handled with advantage to all concerned on the rail and lake lines. It therefore finds that the request of protestants made upon the respondents to provide transportation for these commodities is reasonable, and that their refusal to provide such transportation in the past was unduly disadvantageous to the particular description of traffic involved in this proceeding. Carriers in the future must make some provision for handling this traffic in their boats. (29 I. C. C., 45.)

Express Rates on Fruit from Florida

Railroad Commissioners of the State of Florida v. Southern Express Company. Report by Commissioner Clements:

Complaint is made against the rates charged by the defendants for the transportation of fruit and vegetables from points of production in Florida to stations in the territory south of the Ohio and Potomac rivers and east of the Mississippi river, the complaint being that rates on small shipments to these points are so high as to prohibit their movement. The commission, on a consideration of the facts in the case, is convinced that many of the rates involved are unreasonable, and that improper adjustments in rates have grown up. No order is made in the case, however, because supplements to the tariffs involved have been filed, effective February 1, providing for the application of the second class rates recently prescribed by the commission in all instances where the rates are now in excess thereof. This will result in substantial reductions in many of the rates in question and will in a marked degree afford a relief from inequalities now existing. There should be a fair test of the rates resulting from the order in the general case before exceptions are made requiring lower rates on particular commodities. (28 I. C. C., 634.)

STATE COMMISSIONS

The railroad commission of Alabama has ordered the standard passenger fare on the Nashville, Chattanooga & St. Louis to be reduced, in thirty days, from January 23, to 2½ cents a mile.

At the request of the railways and of a large number of shippers the Railroad and Public Service Commission of Montana has ordered a rehearing of the case in which it recently ordered large reductions in distributive freight rates throughout the state and the rates fixed in the previous order are suspended.

Representatives of the Brotherhood of Locomotive Engineers asked the Illinois Public Utilities Commission at a hearing at Springfield on January 23, to enforce the law requiring railways to equip their locomotives with electric headlights. Engineers in the employ of the commission have begun an investigation.

The Public Utilities Commission of Illinois has ordered the express companies of that state to change their rates, regulations and forms of tariff, on or before February 1, to correspond with the new system of rates which has been prescribed by the Interstate Commerce Commission for interstate traffic, and presumably making large reductions.

The Pennsylvania Public Service Commission has issued an order to the effect that all public service companies, before constructing any structures, wires, etc., across the structures or other facilities of any other public service company, whether underground or above ground, or at the same or at different levels, shall serve fifteen days' written notice on the companies whose structures it is desired to cross. This notice must specify the nature and character of the contemplated crossing and the exact location thereof, and must be filed with the commission with proof of service thereof. This regulation does not apply to crossings of the tracks of railroads and street railways, or of the crossing of tracks over public highways or streets. Track crossings will be subject to regulations to be hereafter adopted by the commission.

PERSONNEL OF COMMISSIONS

J. Beaumont, signal engineer of the Chicago Great Western, has been appointed senior signal engineer with the board of valuation engineers, Interstate Commerce Commission, for the third district, with headquarters at Chicago, effective February 1.

COURT NEWS

Judge Willard, of the United States Court, at Sioux City, Ia., has rendered a decision upholding the 2½-cent passenger rate in South Dakota and declaring the 2-cent rate ordered by the state unconstitutional.

In the Federal Court at Philadelphia, January 27, testimony was taken in the suit of the government against the Delaware, Lackawanna & Western to test the right of the company to carry coal which has been produced by the company's mines, transferred to the coal company controlled in the interest of the road and then transported over the road to New York harbor and elsewhere. The prosecution declares that the coal company is a mere cloak for the railroad company and that these dealings in coal are a violation both of the commodities clause of the Interstate Commerce act and of the anti-trust law.

The Supreme Court of the United States, on Monday last, sustained the Interstate Commerce Commission's order requiring transcontinental railroads to permit California orange shippers to pre-ice and pre-cool their fruit going to Eastern cities, and limiting the charge for the use of the cars during the pre-cooling stage to \$7.50 each. The decision affirms the action of the United States Commerce Court in upholding the order, which was directed to the Atchison, Topeka & Santa Fe and other roads. Justice Lamar read the opinion, which was unanimous.

The record showed that the fruit shippers' method of icing cost about \$54 less, per car, than the amount charged by the railroads. The Interstate Commerce Commission ordered the roads to perform the service at \$54 a car less, or to restore to them the privilege of doing their own icing. About 20,000 carloads of fruit a year come within the scope of the order.

The Supreme Court of the United States this week reversed a judgment of the Supreme Court of South Dakota awarding damages against the Chicago, Milwaukee & St. Paul in double the amount of the actual damage. The plaintiff's property had been damaged by fire due to sparks from a locomotive. The railroad had offered a settlement less than the damage alleged, but the plaintiff had demanded more than the actual damage.

Under the statute unless the road offers a settlement within a given time on the basis of actual damage the courts are to award double damages. The Supreme Court did not pass on the constitutionality of the statute, but apparently based its judgment reversing the case on the ground that the complainant in the court below had made a settlement impossible on the basis of actual damage within the given time by insisting on a greater sum; and that the railroad company's defense had not been impaired by the fact that the company had tendered in settlement a smaller sum than the actual damage.

New York Suburban Fares

The decision of the Supreme Court of New York sustaining advanced passenger fares to and from New York City was briefly reported in the *Railway Age Gazette* January 16, page 146. An abstract of the opinion in the case against the New York, New Haven & Hartford appears under another head in this issue.

The decision in the case of the New York Central is by Justice Lyon. Except on the points peculiar to the New Haven situation, it is parallel to the New Haven decision, which was written by Justice Kellogg. The main points are that the burden of proof in such a case is on the plaintiff and that the commission did not examine all of the pertinent facts. The court holds that the railroad was entitled to have the determination of the commission based on the merits of the case and to be advised what, in the opinion of the commission, was a fair and reasonable rate, rather than to have the decision based on the ground that it had not overcome the presumption of wrong doing on its part in making the advance. The New York Central made its rates slightly higher than those of other lines leading to New York; but the commission, in ordering the restoration of the old rates, was approving rates much lower than those on other lines. From all the evidence there was not a preponderance of proof that the new rates were unjust; on the contrary, there was such a lack of proof that if a jury in the Supreme Court were to render a decision like that of the commission, the court would set the verdict aside as against the weight of evidence.

Railway Officers

Executive, Financial, Legal and Accounting

G. C. Jackson has been appointed auditor of claims of the Canadian Pacific, with headquarters at Montreal, Que.

J. M. Kurn has resigned as general superintendent of the Northern district, western lines, of the Atchison, Topeka & Santa Fe, with office at La Junta, Col., to become president and general manager of the Detroit, Toledo & Ironton, with office at Detroit, Mich.

Alfred H. Smith, president of the New York Central Lines, at New York, has been elected president also of the Rutland Railroad. Howard Elliott, chairman of the board of the New York, New Haven & Hartford, at Boston, Mass., has been elected also vice-president of the Rutland. George T. Jarvis, general manager of the Rutland, is now vice-president and general manager, and F. J. Eaton, acting auditor, is now auditor.

William H. Bancroft, for nine years vice-president and general manager of the Oregon Short Line, has asked to be relieved of the duties of that office, effective February 1. He will continue as a vice-president, however, his duties to be only such as shall be assigned to him by the board of directors, the executive committee or the chairman. Mr. Bancroft also retains his positions as first vice-president of the San Pedro, Los Angeles & Salt Lake and president of the Utah Light & Railway Company.

George L. Peck, who becomes fourth vice-president of the Pennsylvania Lines West of Pittsburgh, was born on July 10, 1858, at Sandusky, Ohio. He began railway work in 1873 as a messenger boy on the Toledo division of the Pennsylvania Company. He was promoted in 1874 to telegraph operator, and from 1876 to 1881 was a train despatcher in the same company. From 1881 to 1882 he held the same position on the Columbus, Hocking Valley & Toledo. In 1882 he was made trainmaster on the Toledo division of the Pennsylvania Company and from 1894 to January 15, 1896, was superintendent of the Richmond division of the Pittsburgh, Cincinnati, Chicago & St. Louis. He held the position of superintendent of the Pittsburgh division of the same road from January 15, 1896, to January 1, 1901, when he was made general superintendent of the Southwest System of the Pennsylvania Lines West of Pittsburgh. On June 7, 1901, he was promoted to general manager of the Pennsylvania Lines West of Pittsburgh, and on January 1, 1913, he was elected fifth vice-president and now becomes fourth vice-president of the same system.



G. L. Peck

The resignation of Joseph Wood, as first vice-president and director of the Pennsylvania lines West of Pittsburgh, to take effect February 1, has been accepted, and J. J. Turner, second vice-president, has been elected first vice-president to succeed him as general executive in charge of the lines West of Pittsburgh. E. B. Taylor, third vice-president, succeeds Mr. Turner; D. T. McCabe, fourth vice-president, succeeds Mr. Taylor, and G. L. Peck, fifth vice-president, succeeds Mr. McCabe, all with headquarters at Pittsburgh, Pa. The new office of vice-president at Chicago has been created and A. M. Schoyer, general manager of the Vandalia Railroad at St. Louis, Mo., has been

elected to that position. S. C. Scott, assistant to the first vice-president, has been made vice-president's assistant, and William Fleming, chief clerk to the second vice-president, has been made assistant to the first vice-president, both with headquarters at Pittsburgh.

Alfred McGill Schoyer, who has been elected to the new position of vice-president of the Pennsylvania Lines West of Pittsburgh, with headquarters at Chicago, was born at Allegheny City, Pa., on November 1, 1859. His entire railway service has been with the Pennsylvania Lines West of Pittsburgh, with which company he began work in 1872 as messenger. He was successively until 1892, telegraph operator, train despatcher and chief train despatcher on the Eastern division of the Pennsylvania Company. He was then appointed superintendent of telegraph of the Pennsylvania Lines West of Pittsburgh, which position he held until November 1, 1899, when he was made superintendent of the Eastern division of the Pennsylvania Company, with



A. M. Schoyer

office at Allegheny, Pa. On January 1, 1902, he became general superintendent of the Northwest System, with headquarters at Pittsburgh, Pa., and on January 1, 1913, he was appointed general manager of the Vandalia, with office at St. Louis, Mo., which position he held at the time of his recent election as vice-president of the Pennsylvania Lines west of Pittsburgh, as above noted. From 1893 to 1899 he was superintendent of telegraph of the Vandalia as well as of the Pennsylvania Lines West of Pittsburgh.

James Jewett Turner, second vice-president of the Pennsylvania Lines West of Pittsburgh, has been elected first vice-president and will be the general executive in charge of the Lines West of

Pittsburgh. He was born on April 7, 1853, at Baltimore, Md., and began railway work on February 15, 1870, as a ticket sorter on the Pittsburgh, Cincinnati & St. Louis, at Steubenville, Ohio. The following April he went to the Columbus, Chicago & Indiana Central, at Richmond, Ind., as telegraph operator and was later train despatcher and chief clerk to the superintendent. On May 1, 1880, he was made superintendent of the Indianapolis & Vincennes, at Indianapolis, Ind., which position he held until October, 1885, when he became superintendent of the Eastern division of



J. J. Turner

the Chicago, St. Louis & Pittsburgh, at Richmond, Ind. He remained in that position until April, 1888, and then was superintendent of the Pittsburgh, Cincinnati & St. Louis and its successor, the Pittsburgh, Cincinnati, Chicago & St. Louis, at Pittsburgh, Pa. On January 15, 1896, he became vice-president and general manager of the Terre Haute & Indianapolis, Vandalia Line, with headquarters at St. Louis, Mo., where he remained until his election, on June 7, 1901, as fourth vice-president of the Pennsylvania Lines West of Pittsburgh. Six months later,

he was elected third vice-president and on January 9, 1907, second vice-president, which position he held at the time of his recent election as first vice-president of the same lines. Mr. Turner is an officer also of a number of the railroad companies affiliated with the Pennsylvania Lines West of Pittsburgh.

Daniel Trigg McCabe, who has been elected third vice-president of the Pennsylvania Lines West of Pittsburgh, was born at Abingdon, Va., on November 25, 1849. He entered the service of the



D. T. McCabe

Pennsylvania Lines as a clerk in the auditor's office of the Pittsburgh, Cincinnati & St. Louis in July, 1870. The following November he was promoted to claim clerk in the general freight office, becoming chief clerk in 1872. From April, 1876, to April, 1883, he was division freight agent, in charge of the Second and Third divisions of the Columbus, Chicago & Indiana Central, operated by the Pittsburgh, Cincinnati & St. Louis, and then for one year was general freight agent of the Chicago, St. Louis & Pittsburgh. From April, 1884, to July, 1886, he was general western freight agent and division freight agent of the Second, Third and Fourth divisions of the same road, and then to October, 1890, was assistant general freight agent of the Pittsburgh, Cincinnati & St. Louis and the Chicago, St. Louis & Pittsburgh. In October, 1890, he became assistant general freight agent of the Pittsburgh, Cincinnati, Chicago & St. Louis, and from August, 1892, to April, 1897, was general freight agent. On April 1, 1897, he was made freight traffic manager of the Pennsylvania Lines West of Pittsburgh, and on January 9, 1907, was promoted to fourth vice-president of the Pennsylvania Lines west of Pittsburgh and now becomes third vice-president of the same system. Since 1907 Mr. McCabe has been also third vice-president of the Vandalia.

Edward Ballinger Taylor, who becomes second vice-president of the Pennsylvania Lines West of Pittsburgh, was born on February 6, 1850, near Riverton, N. J. He graduated in 1869



E. B. Taylor

from Haverford College and then entered the Polytechnic College of the state of Pennsylvania, from which he was graduated in 1870. He entered the service of the Pennsylvania Railroad on July 25, 1870, as a clerk in the office of the superintendent of the Middle division at Harrisburg, Pa. He became supervisor of division No. 5, in September, 1871, and on March 1, 1872, was appointed assistant engineer of the Middle division, continuing in that position until January 1, 1875, when he was transferred to a similar position on the Pittsburgh division. On July 24, 1876, he was made superintendent of the Lewistown division, with headquarters at Lewis-

town, Pa., and remained there until January 1, 1879, when he was transferred as superintendent to the West Penn division. He was then transferred to the Lines West of Pittsburgh and made superintendent of the Pittsburgh, Cincinnati & St. Louis. On April 1, 1888, he was promoted to general superintendent of the Northwest System, becoming general superintendent of transportation of all Pennsylvania Lines West of Pittsburgh on March 1, 1890. He was elected a director and fourth vice-president of the Pennsylvania Company, and of the Pittsburgh, Cincinnati, Chicago & St. Louis on December 27, 1901, and third vice-president on January 9, 1907, and now becomes second vice-president, as above noted. Mr. Taylor is also a director and president or vice-president of a number of the corporations forming or affiliated with the Pennsylvania Lines West of Pittsburgh, and is an active member of a number of engineering and scientific societies.

E. E. Calvin, vice-president of the Southern Pacific, has been appointed vice-president and general manager of the Oregon Short Line, with headquarters at Salt Lake City, Utah, succeeding William H. Bancroft. Mr. Calvin was born October 16, 1858, at Indianapolis, Ind., and began railway work in 1873 as telegraph operator for the Indianapolis, Cincinnati & Lafayette. He attended school during 1876, and from April, 1877, to June, 1887, was with the Union Pacific successively as telegraph operator and station agent, assistant superintendent and superintendent of coal mines, train dispatcher, conductor and trainmaster. He was then made division superintendent of the Missouri Pacific and returned to the Union Pacific in February, 1891, as superintendent of the Idaho division. In June, 1895, he went to the International & Great Northern as general superintendent, where he remained until March, 1897, when he was made general superintendent of the Oregon Short Line. Mr. Calvin was appointed assistant general manager of that road in May, 1903, and in April of the following year was chosen vice-president and general manager of the Oregon Railroad & Navigation Company. In February, 1905, he became vice-president and general manager of the Southern Pacific, and in July, 1912, he was made vice-president of that company in general charge of construction and operation, which position he now resigns to return to the Oregon Short Line as vice-president and general manager, as above noted.



E. E. Calvin

Operating

F. J. Thomure, traffic manager of the Mississippi River & Bonne Terre, has been appointed general manager, with headquarters at Bonne Terre, Mo.

H. C. Holmes has been appointed trainmaster of the Atlantic district of the International Railways of Central America, with headquarters at Zacapa, Guatemala.

A. H. Gilbert has been appointed assistant superintendent of the Globe division of the Arizona Eastern with headquarters at Globe, Ariz., succeeding S. B. Moore, resigned.

A. H. Westfall has resigned as general manager of the Chicago, Indianapolis & Louisville, with office at Chicago, and will devote his attention to the Kelvin-Sultana Copper Company, of Kelvin, Ariz., of which he is vice-president and general manager.

C. H. Bristol, superintendent of the Colorado division of the Atchison, Topeka & Santa Fe, with office at Pueblo, Col., has been appointed acting general superintendent, Northern district, western lines, with office at La Junta, Col., succeeding J. M. Kurn, resigned to take service with another company.

Traffic

Thomas R. Ryan, traffic manager of the Mexico North Western at Ciudad Juarez, Chihuahua, Mex., has been appointed traffic manager of the Brazil Railway, with headquarters at Sao Paulo, Brazil.

W. F. Mundee, contracting freight agent of the Macon, Dublin & Savannah at Jacksonville, Fla., has been promoted to commercial agent, with office at Jacksonville, succeeding E. S. Johnson, resigned to go into other business. The position of contracting freight agent has been abolished.

Engineering and Rolling Stock

F. S. Anthony, mechanical superintendent of the Texas & Pacific at Marshall, Tex., has resigned.

R. S. Mennie has been appointed engineer of shop improvements of the Rock Island Lines, with headquarters at Chicago, succeeding W. J. Eddy, promoted.

M. H. Gold has been appointed division engineer of the Alabama division of the Seaboard Air Line, with headquarters at Americus, Ga., succeeding R. B. Gandy, resigned.

H. H. Decker, engineer of maintenance of the Chicago & North Western lines east of the Missouri river, with office at Chicago, has resigned; effective February 1, to engage in the contracting business.

The jurisdiction of S. H. Osborne, division engineer of the Oregon Short Line, is extended to include the entire Idaho division, with headquarters at Pocatello, Idaho, vice G. H. Cumberland, resigned.

J. Beaumont has resigned as signal engineer of the Chicago Great Western, with headquarters at Chicago, to become senior signal engineer with the board of valuation engineers, Interstate Commerce Commission, for the third district, with headquarters at Chicago.

J. H. Watters, master mechanic of the Georgia Railroad at Augusta, Ga., has resigned, effective February 1, after 43 years continuous railway service, to devote his time to other work. A portrait of Mr. Watters and a sketch of his railway career were published in the *Railway Age Gazette* of September 12, 1913, page 477.

F. W. Wilson has been appointed supervisor of locomotive operation of the Cedar Rapids, Minnesota and Dakota divisions of the Chicago, Rock Island & Pacific, with headquarters at Cedar Rapids, Iowa. The jurisdiction of S. T. Patterson, supervisor of locomotive operation of the Chicago Terminal and Illinois division, with headquarters at Chicago, is extended over the East Iowa division. The jurisdiction of John Benzie, supervisor of locomotive operation of the Missouri and Des Moines Valley divisions, with office at Chicago, is extended over the West Iowa division.

F. M. Patterson, assistant to district engineer Illinois district of the Chicago, Burlington & Quincy at Chicago, has been appointed engineer, Missouri district, with headquarters at St. Louis, Mo., to succeed R. W. Willis, who has been appointed engineer, Illinois district, with office at Chicago, in place of G. H. Bremner, resigned. Effective February 1. Mr. Patterson was born December 11, 1868, at Fort Madison, Iowa. He attended the State University of Iowa, leaving at the end of his junior year in 1891. He entered the service of the Chicago, Burlington & Quincy in 1891, and was successively rodman, inspector and instrumentman on construction of St. Louis terminals until 1895. He was then for three years instrumentman and assistant engineer of the Illinois district, and from 1898 to 1901 was resident engineer at Hannibal, Mo. The following two years he was assistant roadmaster and roadmaster on the Missouri district, and during 1904 was engineer in charge of construction of the bridge over Cuivre river on the new line from Old Monroe to Mexico, Mo. From 1905 to 1909 Mr. Patterson was assistant engineer and division engineer of the Illinois district and he was then appointed assistant to district engineer of the Illinois district, from which position he is now promoted to that of engineer, Missouri district, as above noted.

OBITUARY

Daniel Byrnes, attorney for the Minneapolis, St. Paul & Sault Ste. Marie, and formerly attorney for the Chicago & North Western, died at his home in Chicago on January 25, aged 50 years.

Equipment and Supplies

LOCOMOTIVE BUILDING

THE WABASH is inquiring for 50 Mikado and 10 Pacific type locomotives.

THE CHESAPEAKE & OHIO has ordered 14 Mallet type locomotives from the American Locomotive Company, and expects to place orders for 6 Pacific type locomotives next week.

THE BROOKLYN COOPERAGE COMPANY, New York, has ordered one mogul type locomotive from the Davenport Locomotive Works. This locomotive is to be used at Poplar Bluff, Mo.

THE ST. PAUL BRIDGE & TERMINAL has ordered one mogul type locomotive from the American Locomotive Company. This locomotive will have 20 x 26 in. cylinders, 51 in. driving wheels, a total weight in working order of 156,000 lb., and a steam pressure of 180 lb.

THE BOSTON, REVERE BEACH & LYNN has ordered three Forney type locomotives from the American Locomotive Company. These locomotives will have 14 x 18 in. cylinders, 49½ in. driving wheels, a total weight in working order of 91,000 lb., and a steam pressure of 150 lb.

THE RICHMOND, FREDERICKSBURG & POTOMAC has ordered two 8-wheel switching locomotives from the American Locomotive Company. These locomotives will have 24 x 28 in. cylinders, 51 in. driving wheels, a total weight in working order of 230,000 lb., and a steam pressure of 185 lb.

THE MISSOURI PACIFIC, as reported in the *Railway Age Gazette* of December 12, 1913, has given an order to the Baldwin Locomotive Works for 25 Mikado type locomotives for freight service. These locomotives will have 27 x 30 in. cylinders, a weight on the driving wheels of 209,000 lb., a total weight in working order of about 400,000 lb., and a tractive force of 50,160 lb. They will be equipped with Schmidt superheaters and will also have electric headlights and electric cab lights. The railroad expects to receive the first locomotive of the order by the middle of February.

CAR BUILDING

THE WHEELING & LAKE ERIE is in the market for 20 caboose cars.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 12 all-steel vestibuled coaches from the Pullman Car Company.

THE UNION PACIFIC has ordered 2,000 steel underframe box cars from the American Car & Foundry Company and 2,000 steel underframe box cars, 600 automobile and 400 stock cars from the Pressed Steel Car Company.

IRON AND STEEL

THE CHICAGO & NORTH WESTERN has ordered 35,000 tons of rails from the Illinois Steel Company, and 5,000 tons of bridge material from the American Bridge Company.

SIGNALING

The Philadelphia & Reading has contracted with the Federal Signal Company for the installation of a mechanical interlocking plant of 36 levers, at Hopewell Junction, N. J. The home and dwarf signals will be operated by electric motors.

MISTLETOE TRAFFIC ON AN ENGLISH RAILWAY.—Mistletoe, as is well known, is popular on the English markets during the holidays. The larger portion of it is imported from France. Statistics are not as yet available for this season, but in 1912 the London & Southwestern alone handled 1,500,000 bunches, having a total value of \$300,000.

Supply Trade News

The Maloney Oil & Manufacturing Company, Scranton, Pa., has removed its New York office to 50 Church street, room 1570.

John F. Schurch has been appointed to the position of vice-president of the Damascus Brake Beam Company, Cleveland, Ohio.

Erich Joseph, formerly New York manager of the Orenstein-Arthur Koppel Company, Koppel, Pa., has been appointed general manager of that company, succeeding Mr. A. Reiche, who has left the company to engage in work in Germany.

J. H. Watters, master mechanic of the Georgia Railroad, has tendered his resignation to take effect February 1, so that he may be able to devote the future to the introduction of his several patented locomotive appliances.

R. M. Campbell has been appointed special representative of the railway department in the eastern territory of the Detroit Graphite Company, Detroit, Mich., with headquarters at 135 Broadway, New York City. Mr. Campbell was for a number of years with the Ohio Brass Company and the Transportation Utilities Company.

William Cooper, director of buildings and equipment at the East Pittsburgh works of the Westinghouse Electric & Manufacturing Company, died on January 23. Mr. Cooper was born



W. Cooper

near Watertown, N. Y., on November 24, 1861. He attended Cornell University and began in business with a cheese manufacturing firm, having charge of the power plant. At the age of 25 he went to Ottumwa, Ia., to engage in the building of automatic screw machines. Soon after he started a shop in Minneapolis for himself, undertaking the development of a compressed air traction system. He was thus led to the investigation of the hydraulic speed changing gear, now manufactured by the Waterbury Tool Company, Waterbury, Conn., and used for moving the turrets on battleships. Mr. Cooper then entered the employ of the Twin City Rapid Transit Company, Minneapolis, being master mechanic and chief engineer for four years. In 1894 he went to the General Electric Company, and during his stay at Schenectady supervised the manufacture of the locomotives for the Baltimore & Ohio terminal at Baltimore, being detailed to put them into service after their erection. After the completion of this work he became associated with Blood & Hale, consulting engineers, Boston, Mass. On September 1, 1897, he entered the employ of the Bullock Electric & Manufacturing Company, Cincinnati, Ohio, as general superintendent in charge of engineering and manufacturing. In 1904 he entered the railway engineering department of the Westinghouse Electric & Manufacturing Company. His first work was to investigate the unit switch control, which the company was then exploiting. Following that he was appointed engineering inspector. He was also one of the members of the verification committee. Two years ago, when the works department was organized, he was made director of building and equipment. In addition to other work in the railway field he was active in the design and manufacture of the equipment furnished the several roads, which have been electrified by the Westinghouse company.

Railway Construction

ALABAMA GREAT SOUTHERN.—This company will lay 27 miles of double track between York, Ala., and Meriden, Miss., it is said, and will also construct three miles to connect the road with the Southern Railway lines at Chattanooga, Tenn.

CHARLESTON INTERURBAN.—An officer of this company, which operates an electric line from St. Albans, W. Va., east to Charleston, writes that the prospects are fair for building the extension projected about a year ago from Charleston, south-east to Montgomery, about 25 miles. It has not yet been decided when contracts for the work will be let. The plans include putting up a 1,000 ft. steel bridge.

EUREKA NEVADA.—An officer is quoted as saying that final surveys are being made to build a branch from the main line at Raine's siding, east to the mining camp of Bullion, Nev., about 14 miles.

INTERCOLONIAL RAILWAY.—An officer writes that the contract has been given to the Union Construction Company, North Sydney, N. S., to build from North Sydney to Leitch Creek. The line is being built to carry coal and will have maximum grades of 0.6 per cent. and maximum curvature of 5 deg. The work involves handling about 21,000 cu. yd. to the mile. (January 28, p. 209.)

LACOMBE & BLIND MAN VALLEY ELECTRIC.—Bids are wanted until January 31, it is said, for building about 18 miles of line between Lacombe, Alta., and Bentley. Plans may be obtained from Farncomb & Inkster, engineers, Sheppard block, South Edmonton, Alta.

ORANGE NORTHEASTERN.—We are told that the Calcasieu Construction Company will build the section of this line from Port Orange, north through Louisiana via Vinton, Starks, Leesville and Merryville, 120 miles. About 6.5 miles of embankment work has been finished, but no track has yet been laid. C. B. Richards, president; C. H. Mandell, chief engineer, and E. Kennedy, manager, Lake Charles, La. (January 16, p. 149.)

OREGON ROADS.—According to press reports from Oregon City, a number of logging companies plan to jointly build a line from Molalla, Oregon, on the Portland, Eugene & Eastern, southeast to the mouth of Trout creek, about 12 miles. The plans include building a number of logging lines from Trout creek.

W. R. PICKERING LUMBER COMPANY'S LINE.—An officer writes that this company recently built a 6-mile logging line in Sabine county from Haslam, Tex., which is opposite Logansport, La., and this line is to be extended. The report that a contract has let to build 40 miles is not true, as the final terminus of the extension has not yet been decided upon. (See Texas Roads, January 16, p. 150.)

QUEBEC EXTENSION (Electric).—An officer writes that contracts are to be let next spring to build from Washburn, Me., which is on the Aroostook Valley, west through the northern part of Maine to a point in Montgomery county, Que., 111.6 miles west of Washburn. This line is to form part of a through line to connect the Canadian transcontinental lines with the Atlantic winter ports. A. R. Gould, president of the Aroostook Valley Railroad, at Presque Isle, Maine, is president of the new company, and S. B. Wass is chief engineer, Fredericton, N. B. (January 16, p. 150.)

SAN ANGELO & GULF.—An officer writes that the plans call for building from San Angelo, Tex., southeast via New Braunfels, Yoakum and Victoria to Aransas Harbor on the Gulf of Mexico. Grading work has been finished on 38 miles. The company will carry out the track laying on this section with its own forces, and on completion of this work will let contracts for building other sections. Some of the work will be heavy west of New Braunfels, and there will be two steel bridges on the line. The plans include putting up a two-story fireproof office building and constructing stations at various points. The principal commo-

dities to be carried will be cotton, cattle and general farm products. U. G. Dotson, president, and A. B. Thurston, chief engineer, Yoakum.

SAN PEDRO, LOS ANGELES & SALT LAKE.—An officer writes that the company expects to let contracts soon to build a 15-mile branch from Delta, Utah, northwest. The maximum grade will be 0.5 per cent., and maximum curvature 4 deg. The branch is to be built to carry grain, hay, beets, etc.

SHELBYVILLE, PETERSBURG & DECATUR (Electric).—Surveys have been completed, it is said, on the first section of 20 miles between Shelbyville, Tenn., and Petersburg. S. P. Kirkpatrick, Shelbyville, is an incorporator, and G. B. Howard & Co., Franklin, Tenn., are the engineers. (January 16, p. 150.)

TEXAS, KANSAS & OMAHA.—We are told that this company has projected a line from Amarillo, Tex., north via Dumas and Texhoma, Okla., to Garden City, Kan., thence northeast to Omaha, Neb., about 500 miles. Residents of Amarillo have raised a bonus of \$80,000 and will provide a right of way through Potter county, conditional upon actual construction work being started by March 6. F. T. Burnham, Dwight building, Kansas City, Mo., may be addressed.

TUG RIVER & KENTUCKY.—Incorporated in Kentucky with \$50,000 capital and headquarters at Ashland. It is understood that the company plans to build an 18-mile coal road in Pike county, Ky. The incorporators include L. E. Johnson, Roanoke, Va., J. I. Doran, Philadelphia, Pa., and W. A. Ginn, Ashland, Ky.

RAILWAY STRUCTURES

BOSTON, MASS.—The port directors of Boston have given a contract to the H. A. Hanscom Construction Company at \$104,413, for grading work and laying 6.25 miles of track in a new railroad yard at South Boston.

BUFFALO, N. Y.—An officer of the Delaware, Lackawanna & Western writes, that a contract for building the new passenger station at Buffalo has been given to the Hedden Construction Company, New York. The foundation work will be carried out by the Buffalo Dredging Company, Buffalo, and a contract for the steel work has been given to the Lackawanna Bridge Company, New York. (September 12, p. 480.)

FREEPORT, TEXAS.—Preliminary surveys to determine the best location for a combined railroad and county bridge, to be built jointly by the Houston & Brazos Valley and Brazoria county over the Brazos river to connect Velasco and Freeport, was started recently. The construction will be pushed to complete the bridge during 1914 or early in 1915. The cost of the bridge will be over \$120,000. It will be a steel structure, with a 125-ft. draw, and constructed to accommodate both railroad and highway traffic.

NONCONNAH, TENN.—The Illinois Central recently awarded a contract to George B. Swift & Co., Chicago, for additional buildings in connection with the new terminals at this point, including tool buildings, pump house, sand house, transformer building, wheel shop, lumber shed, etc. The main buildings, for which the same company had the contract, have been completed.

ROCHESTER, N. Y.—An officer of the Buffalo, Rochester & Pittsburgh writes that a contract has been given to the Gorsline & Swan Construction Company for the concrete and steel work on a reinforced concrete warehouse to be built at King and Maple streets, in Rochester. The building is to be six stories high, 70 ft. wide, and 270 ft. long.

WHITE PLAINS, N. Y.—Preliminary work has been begun by F. T. Ley & Co., Springfield, Mass., on a new passenger station for the New York Central & Hudson River at White Plains. The new station is to be of tapestry brick with limestone base and terra cotta trimmings, and copper roof. The main waiting room will be 38 ft. x 80 ft. It is to be built on the south side of Railroad avenue, and will have a passenger subway leading to the platforms of both the north and southbound local and express tracks.

Railway Financial News

ALASKA PACIFIC RAILWAY & TERMINAL.—R. D. Gray, of Katalla, Alaska, has been appointed a receiver of this company, which has but a few miles of track laid but has some track terminals at Martin Point, Alaska, and the construction of which it was claimed was stopped by United States executive orders.

BOSTON & MAINE.—Howard Elliott, chairman of the board of directors, has resigned both as a director and as chairman. He explained in offering his resignation that this was in accordance with the desires of the department of justice with which Mr. Elliott is working toward the separation of the Boston & Maine and the New York, New Haven & Hartford.

CHESAPEAKE & OHIO.—See an item in General News Department in regard to hiring freight cars and coal cars.

CHICAGO, ANAMOSA & NORTHERN.—This road, which runs from Anamosa, Iowa, to Quasqueton, 36 miles, was sold at auction on January 21 for \$252,030 to George B. Caldwell and Louis E. Meyers.

ST. LOUIS & SAN FRANCISCO.—The receivers have brought suit against certain members of the board of directors and former members of the board of directors for \$14,408,921, which, it is claimed, belongs to the St. Louis & San Francisco, because of \$1,309,495 deficit in the earnings of the St. Louis, Brownsville & Mexico and \$13,099,426 said to have been paid directly by the St. Louis & San Francisco to the St. Louis Union Trust Company as manager of the Brownsville syndicate. The defendants named in the petition are B. F. Yoakum, chairman of the board and of the executive committee; James Campbell, vice-president, and president of the North American Company; W. K. Bixby, formerly a director; Thomas H. West, formerly a director and one of the original receivers, and president of the St. Louis Union Trust Company; A. S. Greig, vice-president and director; B. L. Winchell, formerly president and one of the original receivers; C. W. Hillard, formerly vice-president and now agent for the receivers; E. V. R. Thayer, formerly a director; Frank Trumbull, formerly a director, and Hans Winterfelt, formerly a director. So far as has appeared, the receivers, in their petition, allege that Mr. Yoakum, Mr. Campbell and Mr. Bixby are the only defendants in the suit who acted as both buyers and sellers to their individual profit in the purchase of the St. Louis, Brownsville & Mexico.

Frank Trumbull, commenting to *The Wall Street Journal* on the suit, said: "I have not seen the petition and am, therefore, unaware of its contents. I was a director of the Frisco for a short time but never participated, either directly or indirectly, in the profit on any Frisco transaction. Throughout my service as director I was a considerable holder of Frisco stock, which is evidence of my good faith in acting for what I deemed to be the best interests of the company. The trial of the case will, of course, develop all these facts."

The receivers have deposited \$74,725 to pay series N equipment trust certificates which matured January 1. On the other equipment trusts which matured January 1 there was 60 days' grace allowed.

SEABOARD AIR LINE.—A dividend of 1 per cent. has been declared on the preferred stock. An initial dividend of 1 per cent. was declared in October, and the second dividend of 1 per cent. at the end of the three months' period is understood to mean that the stock may, at least tentatively, be classed as on a 4 per cent. annual basis. At the present rate of earnings dividends of 4 per cent. will call for just about half of the surplus available for dividends after the payment of the full 5 per cent. interest on the adjustment bonds.

VIRGINIAN.—In October the Virginian made the best record in operation in its history. During this month it earned \$673,527; its operating expenses were \$316,348, and its operating ratio, therefore, was 46.97. During the present fiscal year the Virginian has been operating on a 52.72 per cent. ratio, as compared with a 59.13 per cent. ratio in the corresponding period of the previous year.